



AGRICULTURAL RESEARCH INSTITUTE  
PUSA

PROCEEDINGS  
OF THE  
ZOOLOGICAL SOCIETY  
OF LONDON.

---

PART IV.

1836.

PRINTED FOR THE SOCIETY,  
BY R. AND J. E. TAYLOR, RED LION COURT, FLEET STREET.





# LIST

## OF

### CONTRIBUTORS,

*With References to the several Articles contributed by each.*

	<i>page</i>
<hr style="width: 20%; margin: 10px auto;"/>	
BENNETT, E. T., Esq.	
Remarks upon a series of the <i>Indian Antelope</i> ( <i>Antelope cervicapra</i> , Pall.) .....	34
On the <i>Brush-tailed Kangaroo</i> ( <i>Macropus penicillatus</i> , Gray) .....	41
BENNETT, FREDERICK DERELL, Esq.	
Notes on the anatomy of the <i>Spermaceti Whale</i> ( <i>Physeter macrocephalus</i> , Lac.) .....	127
BENNETT, G., Esq.	
Notes relating to the habits of the <i>Spermaceti Whale</i> , and to a large species of <i>Grampus</i> , called the <i>Killer</i> .....	53
Observations on a species of <i>Glaucus</i> , referred to <i>G. heapterygus</i> of Cuvier .....	113
BETE, Capt.                     }	
BRETON, Lieut.                }	
Denation of <i>Birds</i> from Swan River .....	85
BRODERIP, W. J., Esq.	
Description of some new species of <i>Shells</i> belonging to the genera <i>Spondylus</i> , <i>Voluta</i> , <i>Conus</i> , <i>Purpura</i> , and <i>Bulinus</i> . .....	43
BURTON, E., Esq.	
Description of a new species of <i>Pipra</i> .....	113
CUVIER, M. F.	
Memoir on the genera <i>Dipus</i> and <i>Gerbillus</i> .....	141
DUGMORE, Rev. H.	
Note respecting a <i>Sea Eagle</i> ( <i>Haliæetus albicilla</i> , Sav.), in the possession of Lieut.-Col. Mason, of Necton Hall near Swaffham, Norfolk .....	49

FULLER, E., Esq.	page
Notice of the rearing of two <i>hybrids</i> from a Barn-door <i>Hen</i> , having a cross from a Pheasant, and a Pheasant cock . . . . .	84
GARNER, R., Esq.	
On the anatomy of the <i>Lamellibranchiate Conchiferous</i> <i>animals</i> . . . . .	12
GOULD, Mr. J.	
Characters of some new species of <i>Birds</i> in the Society's Collection . . . . .	5
On a new genus of <i>Birds</i> , <i>Kittacincla</i> . . . . .	7
Exhibition of <i>Trogon resplendens</i> and <i>T. pavoninus</i> . . . . .	12
Characters of some new <i>Birds</i> in the Society's Collection, including two new genera, <i>Paradoxornis</i> and <i>Actinodura</i> . . . . .	17
Exhibition of <i>Birds</i> from North Africa presented to the Society by Sir Thomas Reade, with other specimens sent by M. Temminck to Mr. Gould . . . . .	59
Characters of two new species of <i>Birds</i> constituting a new genus, <i>Aplonis</i> . . . . .	73
Characters of a new species of <i>Ortyx</i> from Mexico and two new species of <i>Zosterops</i> from New South Wales. . . . .	75
Characters of three new species of the genus <i>Strix</i> . . . . .	140
Characters of some new species of <i>Birds</i> belonging to the genera <i>Tamatia</i> and <i>Cursorius</i> . . . . .	80
Characters of some new species of <i>Birds</i> from Swan River Exhibition of <i>Birds</i> allied to the <i>European Wren</i> , with characters of new species . . . . .	85
Characters of new species of <i>Birds</i> from New South Wales Exhibition of the specimens figured in the first part of Mr. Gould's work on the 'Australian Birds,' with characters of the new species . . . . .	88
	104
	142
GRAY, J. E., Esq.	
Memoir on the genus <i>Moschus</i> of Linnæus, with descrip- tions of two new species . . . . .	63
Observations upon the tufts of hair observable upon the posterior legs of the genus <i>Cervus</i> , as a character of that group, and as a means of subdividing it into natural sections . . . . .	66
Characters of some new species of <i>Mammalia</i> in the So- ciety's Collection, with remarks upon the dentition of the <i>Carnivora</i> , and upon the value of the characters used by M. Cuvier to separate the <i>plantigrade</i> from the <i>digitigrade Car-</i> <i>nivora</i> . . . . .	87
Remark upon the habits of the <i>Cuckoo</i> . . . . .	104
On a peculiarity in the structure of the ligament in some bivalve shells . . . . .	104
Remarks upon a specimen of <i>Argonauta</i> with an <i>Ocythoe</i> from the Cape of Good Hope . . . . .	121

GREEN, Capt.	page
Note describing a specimen of the Barn-door <i>Hen</i> which had assumed the <i>Cock</i> plumage.....	49
HARVEY, J. B., Esq.	
Note upon the thickening of the lip of <i>Rostellaria pes Peli-</i> <i>cani</i> , Lam. ....	46
Letter referring to a collection of marine productions, in- cluding a specimen of <i>Capros Aper</i> , Lacep., and a new species of <i>Tubularia</i> ( <i>T. gracilis</i> , Harv.), collected on the south coast of Devonshire, and presented by the writer to the Society ..	54
Notice of the occurrence of four specimens of <i>Velella lim-</i> <i>bosa</i> , Lam., on the beach at Teignmouth .....	79
Exhibition of <i>Fossils</i> from Devonshire, and some species of <i>Ophiura</i> and <i>Asterias</i> from that coast .....	104
Note respecting a specimen of the <i>Electric Ray</i> caught at Teignmouth .....	109
HENNING, Lieut., R.N.	
Note addressed to Col. Sykes mentioning the capture of an <i>Albatross</i> by means of a hook .....	63
HERON, Sir R., Bart.	
Notes on the breeding of <i>Curassows</i> at Stubton .....	1
HODGSON, B. H., Esq.	
On some <i>Scolopacidae</i> of Nipāl .....	7
On the lachrymal sinus in <i>Antelope Thar</i> , and <i>Cervus Ari-</i> <i>stotelis</i> .....	39
Notice of seven species of <i>Vespertilionide</i> observed in the central region of Nepāl .....	46
Description of a new species of <i>Cervus</i> ( <i>C. Barhaiya</i> , Hodg.)	46
MACKAY, R., Esq.	
Letter describing the habits of a <i>Vulture</i> ( <i>Vultur Papa</i> , Linn.) .....	107
MARTIN, Mr. W.	
Notes of the Dissection of a <i>Vulpine Opossum</i> ( <i>Phalangista</i> <i>Vulpina</i> , Cuv.) .....	2
Notice of a rudimentary canine tooth in a female of a species of <i>Deer</i> from South America .....	4
Notes on the visceral and osteological anatomy of the <i>Ca-</i> <i>riama</i> ( <i>Dicholophus cristatus</i> , Ill.) .....	29
Notes on the anatomy of Buffon's <i>Touraco</i> ( <i>Corythæx</i> <i>Buffonii</i> , Vaill.) .....	32
Description of a new <i>Mammal</i> , ( <i>Cynictis melanurus</i> , Mart.)	55
Notes on the anatomy of the <i>Koula</i> ( <i>Phascogaleos fuscus</i> , Desm.) .....	109
Description of two species of the genus <i>Cercoleptes</i> ..	82
Description of a new species of the genus <i>Felis</i> .....	107

MARTIN, Mr. W. ( <i>continued.</i> )	page
Description of the osteology of the <i>Sea Otter</i> ( <i>Enhydra marina</i> , Flem.) . . . . .	59
Notes on the dissection of the <i>Chilian Bush Rat</i> ( <i>Octodon Cumingii</i> , Benn.) . . . . .	70
OGILBY, W., Esq.	
Observations upon the opposable power of the thumb in certain <i>Mammals</i> , considered as a zoological character, and on the natural affinities which subsist between the <i>Bimana</i> , <i>Quadrumania</i> , and <i>Pedimana</i> . . . . .	25
Remarks upon the lachrymal sinus in the <i>Indian Antelope</i> ( <i>Antelope Cervicapra</i> , Pall.) . . . . .	38
Remarks upon the probable identity of <i>Cynictis melanurus</i> Mart., with a species noted by Boshman under the name of <i>Kokebog</i> . . . . .	56
Remarks upon <i>Chironectes Yapock</i> , Desm. . . . .	56
Remarks upon two <i>Antelopes</i> ( <i>Koba</i> and <i>Kob</i> of Buffon)..	102
Remarks upon <i>Canis Himalaicus</i> , Ogilb. . . . .	103
Remarks upon some rare or undescribed <i>Ruminants</i> in the Society's Collection . . . . .	119
On the generic characters of <i>Ruminants</i> . . . . .	131
OWEN, R., Esq.	
Descriptions of some new or rare <i>Cephalopoda</i> collected by Mr. George Bennett . . . . .	19
On the <i>shell</i> and <i>animal</i> of <i>Argonauta hians</i> , Lam. . . . .	22
Remarks on the secretion in the lachrymal sinus of the <i>Indian Antelope</i> ( <i>Antelope Cervicapra</i> , Pall.), with a tabular view of the relations between the habits and habitats of the several species of <i>Antelopes</i> and their suborbital, maxillary, post-auditory, and inguinal glands . . . . .	36
On the morbid appearances observed in the dissection of the <i>Chimpanzee</i> ( <i>Simia Troglodytes</i> , Linn.) . . . . .	41
Notes on the anatomy of the <i>Wombat</i> ( <i>Phascogale Wombat</i> , Per.) . . . . .	49
Reference to Hunter's opinion respecting the productive powers of <i>Hybrids</i> . . . . .	85
On a new <i>Orang</i> ( <i>Simia Morio</i> ) . . . . .	91
Anatomical descriptions of two species of <i>Entozoa</i> , from the stomach of a <i>Tiger</i> ( <i>Felis Tigris</i> , Linn.), one of which forms a new genus, <i>Gnathostoma</i> . . . . .	123
REID, JAMES, Esq.	
Description of a new species of the genus <i>Perameles</i> ( <i>P. Lagotis</i> ) . . . . .	129
RÜPFELL, Dr.	
On the existence of canine teeth in an <i>Abyssinian Antelope</i> ( <i>A. montana</i> , Rüpp.) . . . . .	3

STRICKLAND, H. E., Esq.	page
List of <i>Birds</i> noticed in Asia Minor in the winter of 1835, and in the spring of 1836 . . . . .	97
Exhibition of a skin of a variety of the <i>common Fox</i> ( <i>Canis</i> <i>Vulpes</i> , Linn.), from Smyrna, and a specimen of the <i>Argo-</i> <i>nauta</i> , brought to Mr. Strickland with the animal alive . . . .	102
THIBAUT, M.	
Letter relative to the capture of the <i>Giraffes</i> . . . . .	9
VIGORS, N. A., Esq.	
Characters of a new and singular form among the <i>Tinamous</i> ( <i>Tinamotis Pentlandii</i> , Vig.) . . . . .	79
Characters of two new <i>Parrots</i> in the Society's Collection ( <i>Psittacus augustus</i> , and <i>Ps. Guildingii</i> , Vig.) . . . . .	80
Remarks upon the productive powers of female <i>Hybrids</i> . .	84
WATERHOUSE, G. R., Esq.	
Description of a new genus ( <i>Myrmecobius</i> ) of <i>Mammiferous</i> <i>animals</i> from New Holland, probably belonging to the <i>Mar-</i> <i>supial</i> type . . . . .	69
On a second specimen of <i>Myrmecobius</i> . . . . .	131
WILLIAMSON, W. C., Esq.	
Notes on the appearance of rare <i>Birds</i> in the vicinity of Scarborough . . . . .	76
YARRELL, W., Esq.	
Notice of the <i>Dottrell</i> ( <i>Charadrius Morinellus</i> , Linn.) breeding at Skiddaw, and of the <i>gray Snipe</i> ( <i>Macroramphus</i> <i>griseus</i> , Leach,) having been obtained near Carlisle . . . . .	1
Exhibition of part of Mr. Yarrell's collection of British <i>Fish</i> , with observations upon the method made use of in pre- paring them . . . . .	47
Remarks upon the productiveness of <i>Hybrids</i> . . . . .	84
Notice of a large <i>Carp</i> taken at the Mere near Payne's Hill in Surrey . . . . .	109



# PROCEEDINGS

OF THE

## ZOOLOGICAL SOCIETY OF LONDON.

---

January 12, 1836.

William Yarrell, Esq., in the Chair.

A NOTE addressed to the Secretary by Sir Robert Heron, Bart. M.P. was read. It referred to the writer's success in the breeding of *Cu-rassows* in the last summer at Stubton.

From two individuals in his possession, the male of which is entirely black, and the female of the mottled reddish brown colour which is regarded as characteristic of the *Cruz rubra*, Linn., Sir R. Heron has hatched in the last year six young ones in three broods of two eggs each: the eggs were placed under turkeys and common hens. Respecting one of them no notes were made; but the other five were all of the red colour of the female parent. Two of these, which were at two or three weeks old very strong, being still in the flower-garden, were killed in the night by a rat that had eaten its way into the coop in which they were. Two others were sent to the Earl of Derby, who wanted hens. The remaining one is now nearly, if not quite, full grown; and Sir R. Heron proposes to place it with the old pair.

"There is one great peculiarity," Sir R. Heron remarks, "attending the old pair. Their principal food is Indian corn and greens, both which they eat in common: but whenever any biscuit is given to them, as an occasional treat when visitors are here, the male breaks it and takes it in his mouth; waiting, however long, until the hen takes it out of his bill; which she does without the slightest mark of civility, although on excellent terms with him. This proceeding is invariable."

Mr. Yarrell, on behalf of T. C. Heysham, Esq., of Carlisle, exhibited the egg, the young bird of a week old, one of a month old, and the adult female of the *Dottrell*, *Charadrius Morinellus*, Linn., obtained on Skiddaw in the summer of 1835. Several pairs were breeding in the same locality.

He also stated that a specimen of the *grey Snipe*, *Macroramphus griseus*, Leach, a young bird of the year, has been obtained near  
No. XXXVII.—PROCEEDINGS OF THE ZOOLOGICAL SOCIETY.



Carlisle in the past year. This is the third recorded instance of the occurrence of the species in England.

The following notes by Mr. Martin of a dissection of a *Vulpine Opossum, Phalangista Vulpina*, Cuv., were read.

"This animal, which died a short time since at the Gardens of the Society, was a female. In the length of the body it measured 1 foot 4½ inches, exclusive of the head, which from nose to *occiput* measured 3¼ inches: the tail somewhat exceeded 11 inches. There was no abdominal pouch: the *mammæ* were two in number, about a quarter of an inch apart, very small, pointed, and retracted within the skin. The body was loaded with fat, and a layer of that substance, fully half an inch in thickness, lined the abdominal and *psoas* muscles.

"On leaving the *pylorus*, the *duodenum* was found to dip down to about the middle lumbar *vertebra*, where it crossed the spine, and then making an acute turn ascended till it reached the *pylorus*, where it again turned down abruptly, and lost, in the convolutions of the succeeding portion, or *jejunum*, its distinctive appellation.

"The stomach was large and simple, with a considerable cardiac pouch; when distended with air, its circumference measured 8½ inches, and the great curvature 13.

"The *omentum* was very extensive, and loaded with fat.

"The *pancreas* was thin and indefinite, blending with the fat of the mesentery. It consisted of a main portion or body lying beneath the stomach, whence it spread to the mesentery, a broad slip adhering to the *duodenum* for about 2 inches.

"The liver was not unlike a fig-leaf in general outline, being deeply split into six distinct lobes,—three on the right, and three on the left, besides the *lobulus Spigelii*. In the middle fissure was seated the gall-bladder, its *fundus* being visible *in situ naturali*. The shape of this *vesicula* was, as usual, oval. It was filled with yellow bile. Its duct, which measured altogether 2½ inches, received, at about half an inch from its commencement, several very small hepatic ducts, and entered the *duodenum*, with the pancreatic, 3 inches below the *pylorus*.

"The spleen consisted of three processes or *radii* from a central body: one of these processes adhered to the cardiac portion of the stomach; another floated in the *omentum*; and the third, bound by the mesentery, just covered the left kidney.

"The total length of the intestines was 11 feet 8 inches; the length of the small intestines being 6 feet 10, and of the large 4 feet 10. The mean diameter of the small intestines was half an inch. The mean diameter of the large at their origin was three quarters of an inch; but they contracted as they proceeded to one quarter, and the *rectum* subsequently enlarged to three quarters. The narrow part was filled with irregular knotted *feces*. There were no longitudinal bands or *sacculi*. The texture of the large intestines was thin, and the circular fibres very distinct. The *cæcum* was long and convoluted on the mesentery, and narrowed gradually to a point; its length was 1 foot 4½ inches.

\* "The right kidney was higher than the left. The suprarenal

capsules adhered to their upper *apex*. These bodies were firm, of small size, flat, and hollow. The length of the kidneys was  $1\frac{1}{2}$  inch; their breadth three quarters. The *tubuli* converged to a single point, not elevated into a distinct *papilla*.

"The lungs consisted of three lobes on the right and two on the left side. Daubenton, in his description of a species of *Phalanger*, states that he found but one lobe on the left side, which was a little notched in the middle, but in the present animal the lobes were fairly separate.

"The heart was elongated and pointed, the right ventricle not extending to the *apex*. Its length was  $1\frac{1}{4}$  inch.

"The anal, or rather common, opening, was surrounded by four large glandular follicles, full of creamy fluid of a rank disagreeable odour. The two on each side communicated together by means of a very fine tube, hardly larger than a hair. The *vagina* was longitudinally furrowed, its length to the orifices of the lateral tubes 2 inches. The *clitoris* was small, and about 3 lines long; above it were two small orifices, analogous perhaps to Cowper's glands. The body of the *uterus* was small, and its *parietes* thin and membranous. It was covered by the bladder, which concealed both this portion and its lateral canals and Fallopian tubes. These latter were somewhat more than an inch in length. The ovaries were small and compressed.

"The tongue was smooth: its length from the *epiglottis* to the tip,  $2\frac{1}{4}$  inches; its breadth three quarters: its *apex* was somewhat acute. The *epiglottis* was broad and slightly bifid. The thyroid glands were oval, and half an inch long. The thyroid cartilage was remarkable for a rounded projection anteriorly, over which the *os hyoides* formed an adapted arch, capable of moving up and down on the projection, as drawn one way or other by its muscles.

"The morbid appearances consisted of great inflammation at the *pylorus*, with patches of an almost gangrenous appearance; a knot of enlarged mesenteric glands, which had begun to suppurate; and extensive adhesions to each other of the small intestines.

A notice by Dr. Rüppell, For. Memb. Z. S., of the existence of canine teeth in an Abyssinian *Antelope*, *Antelope montana*, Rüpp., was read. It was accompanied by drawings of the structure described in it, which were exhibited.

The following is a translation of Dr. Rüppell's communication.

In several *Mammalia* of the order *Ruminantia* the adult males, and even some females, possess canine teeth, which are more or less developed; to these teeth no other use has been attributed than that of a weapon of defence. The *Camels* (*Camelus*), the *Musk Deer* (*Moschus*), and the *Muntjak* of India (*Cervus Muntjak*), possess these canine teeth in both sexes. In the *red Deer* (*Cervus Elaphus*) and in the *rein Deer* (*Cerv. Tarandus*), the adult males alone are provided with them.

I have just ascertained that there is a species of *Antelope* which possesses these canine teeth; but in which, by a singular anomaly,

it is only the young males that are furnished with them. In these too they can only be considered in the light of half-developed germs; for the cartilaginous part which covers the palate and the upper jaw entirely conceals them.

It is the *Ant. montana*, which I discovered in 1824 in the neighbourhood of Sennaar, and of which I published in my 'Zoological Atlas' the figure of an adult male, that is provided, in its youth, with these anomalous canine teeth: the adults of both sexes, and the young females, are destitute of them. I observed, in my last journey in Abyssinia, many individuals of this species in the valleys in the neighbourhood of Gondar: it is far from rare in that locality, but the jungles mingled with thorns, which are its favourite retreat, render the chase of it extremely difficult.

At the time of the publication of my description of this new species, in 1826, I was possessed of only a single adult male, and there were consequently many deficiencies in my account of it. I am now enabled to add to this notice that the females of this species are always destitute of horns; that both sexes have, in the [groins] two rather deep pits covered by a stiff bundle of white hairs; and finally that the species lives in pairs in the valleys of the western part of Abyssinia, where it takes the place of *Ant. Saltiana*, an animal which it exceeds in size by nearly one half. These two species are called by the natives *Madoqua*, by which name the Abyssinians also designate the *Ant. Grimmia*, which equally constitutes a part of the game of that country, so rich in different forms of the *Ruminant* order.—F. R.

A note by Mr. Martin was subsequently read, in which it was stated that it had once occurred to him to observe a rudimentary canine tooth in the female of a species of *Deer* from South America, the body of which had been sent to the Society's house by Sir P. Grey Egerton, for examination. Having noticed an enlargement of the gum of the upper jaw, in the situation in which a canine tooth might possibly be supposed to exist, he cut into it, and found the germ of a canine tooth, about 3 lines in length, imbedded in the gum, and destitute of fang.

January 26, 1836.

N. A. Vigors, Esq., in the Chair.

Specimens were exhibited of numerous *Birds*, chiefly from the Society's collection; and Mr. Gould, at the request of the Chairman, directed the attention of the Meeting to those among them which he regarded as principally interesting either on account of their novelty or for the peculiarity of their form.

They included the following species of the genus *Edolius*, Cuv., which were compared with numerous others placed upon the table for that purpose.

*EDOLIUS GRANDIS. Ed. ater viridi metallicè splendens; capite cristato; rectricum duarum externarum scapis longissimis, vexillis ad apicem latè spatulatis.*

Long. tot. (rectricibus externis exclusis) 14 unc.; rostri,  $1\frac{1}{4}$ ; alæ,  $6\frac{3}{4}$ ; caudæ, 7; tarsi,  $1\frac{1}{4}$ .

*Rostrum pedesque nigri.*

*Hab.* in Nepaliâ et (verosimiliter) in Sumatrâ.

This species may be distinguished from *Ed. Malabaricus* by its superiority in size, and by the greater fullness and length of its crest. The recurved feathers of the upper part of the head measure an inch and a half in length.

*EDOLIUS RANGOONENSIS. Ed. ater viridi splendens; rectricum externarum scapis longissimis, vexillis latè spatulatis ad apicis marginem anteriorem præditis.*

Long. tot. (rectricibus externis exclusis) 12 unc.; rostri,  $1\frac{1}{4}$ ; alæ, 6; caudæ,  $5\frac{1}{4}$ ; tarsi, 1.

*Rostrum pedesque nigri.*

*Hab.* apud Rangoon.

Distinguishable from *Ed. Malabaricus*, to which it is nearly allied, by its shorter beak, and by the total absence from its forehead of the fine curled plumes which decorate that bird; the wing is also somewhat shorter.

*EDOLIUS CRISHNA. Ed. velutino-ater viridi metallicè (præsertim ad alas) splendens; gutturi plumis sub lanceolatis, viridibus; capite pilis longissimis pluribus ornato; rectricum externarum vexillis spiraliter intortis.*

Long. tot. (rectricibus externis exclusis) 12 unc.; rostri,  $1\frac{1}{4}$ ; alæ, 7; caudæ, 6; tarsi, 1.

Crishna Crow, *Lath., Hist.*

*Hab.* in Nepaliâ.

The bill of this species is more cultrated and lengthened than is usual in the genus. The outer feathers of the tail, which are spi-

rally reflected inwards, are not so much produced as those of *Ed. Malabaricus*. A very curious character is furnished by the long, hair-like, black filaments which spring from the head and measure nearly 4 inches in length.

*EDOLIUS VIRIDISCEPS. Ed. intensè splendenti chalybeo-viridis, supra magis saturatus.*

Long. tot. 11 unc.; rostri,  $1\frac{1}{4}$ ; alæ,  $5\frac{1}{2}$ ; caudæ, 5; tarsi, 1.

*Rostrum pedesque nigri.*

*Hab.* apud Manillam.

The remaining previously undescribed *Birds* that were exhibited were characterized by Mr. Gould as follows:

*ORPHEUS MODULATOR. Orph. saturatè brunneus, alis pallidioribus albo bifasciatis; corpore subtus, gutture, genis, strigisque superciliari cinerascens-albidis; rectricum (præter intermediarum quatuor) apicibus latè albis.*

Long. tot. 10 unc.; rostri,  $\frac{3}{4}$ ; alæ,  $4\frac{3}{4}$ ; caudæ, 5; tarsi,  $\frac{1}{2}$ .

*Rostrum pedesque saturatè brunnei.*

*Hab.* in Fretu Magellanico.

This is by far the largest of the genus, and is very similar in all its markings to both *Orph. polyglottus* and *Orph. minor*. Although the bird from which the above character is drawn is from the Straits of Magalhaens, Mr. Gould is inclined to believe that it occurs in Brazil also, and considers it as being, very probably, the *Turdus Orpheus* of Spix, and the *grey Pie of Brazil* of Edwards.

The bands on the wings are produced by the white tips of the secondaries.

*IXOS LEUCOTIS. Ixos supra cinereo-brunneus, subtus pallidior; vertice, gutture, pectoreque nigris; auribus genisque albis; tectricibus caudæ inferioribus ochraceis; caudæ ad basin cinerea in nigrescenti-brunneum apicem versus transeunte, rectricum omnium apicibus albis.*

Long. tot.  $6\frac{1}{2}$  unc.; rostri,  $\frac{3}{4}$ ; alæ,  $3\frac{1}{2}$ ; caudæ, 3; tarsi,  $\frac{1}{4}$ .

*Rostrum pedesque saturatè brunnei.*

*Hab.* in Indiâ Orientali.

*COLLURICINCLA FUSCA. Coll. supra saturatè brunnea, plumis omnibus pallidioribus marginatis; subtus cinereo-albida, plumis in medio lunulâ brunneâ notatis; uropygii plumarum rectricumque apicibus albis.*

Long. tot. 11 unc.; rostri,  $5\frac{1}{4}$ ; alæ,  $5\frac{1}{2}$ ; caudæ, 5; tarsi,  $1\frac{1}{4}$ .

*Rostrum pedesque pallidè brunnei.*

*Hab.* vel in Novâ Zeelandiâ vel in Novâ Cambriâ Australi.

This species is fully a third larger than the *Coll. cinerea* described by Mr. Vigors and Dr. Horsfield in the 'Linnean Transactions.'

*TRICHOPHORUS FLAVEOLUS. Trich. cristatus, supra olivaceo-flavesceus, subtus flavus; alis caudæque olivaceo-brunneis; genis guttureque sordidè albis.*

Long. tot. 8 unc.; *rostri*, 1; *alæ*, 4; *caudæ*,  $3\frac{1}{2}$ ; *tarsi*,  $\frac{3}{4}$ .

*Rostrum* pedesque corneo-brunnei.

*Hab.* in montibus Himalayensibus, in Nepaliâ, &c.

The crest consists of elongated feathers, intermingled with the hairy bristles usual in the genus.

*GEOCICHLA RUBICULA.* *Geo.* dorso, alis, caudaque saturatè cæruleo-cinereis, alis albo latè fasciatis; capite, collo, corporeque subtùs nitidè ferrugineis; crisso caudæque tectricibus inferioribus albis.

Long. tot. 8 unc.; *rostri*, 1; *alæ*,  $4\frac{1}{4}$ ; *caudæ*,  $2\frac{1}{2}$ ; *tarsi*,  $1\frac{1}{2}$ .

*Rostrum* nigrum; *tarsi* brunnei.

*Hab.* in Javâ.

This pretty species resembles in many respects the *Red-breast*, *Erithacus Rubecula*, Swains. It belongs to an interesting group, which was first characterized by M. Kuhl, and of which the Society's collection possesses four well-marked species.

Mr. Gould subsequently directed the attention of the Meeting to a specimen of the *Turdus macrourus* of Dr. Latham, with the view of explaining the characters which induced him to regard that bird as constituting the type of a new

#### GENUS KITTACINULA.

*Rostrum* caput longitudine æquans, ad apicem emarginatum, rectiusculum, compressiusculum.

*Nares* basales, plumis brevibus utplurimum tectæ.

*Alæ* mediocres, rotundatæ: *remige* 1mâ brevissimâ, 4tâ 5tâque subæqualibus, longioribus.

*Cauda* elongata, gradata.

*Tarsi* digitique longiusculi, tenues.

*Obs.* Maribus color suprâ utplurimum niger; subtùs brunneus vel albus.

A paper by B. H. Hodgson, Esq., Corr. Memb. Z.S., on some of the *Scolopaciæ* of Nipâl, was read; the copy transmitted by that gentleman to the Society containing various corrections of his memoir which was published at Calcutta in the 'Gleanings of Science' for August, 1831.

Mr. Hodgson's object in the present paper is to bring under the notice of zoologists the various species of the family referred to which occur in Nipâl, on the natural history of which country he has, during a residence of several years, been engaged in making most extensive researches. The result of these it is his intention immediately to publish, accompanied by finished representations of the animals, taken from drawings made in almost every instance from numerous living individuals of the several races.

Mr. Hodgson first describes in detail the *common Woodcock*, *Scolopæ Rusticola*, Linn., as it occurs in Nipâl; where it is, in every respect of form and colour, evidently identical with the European bird. In Nipâl also it seems to be, as it is in Western Europe, of

migratory habits : and the periods of its arrival in, and departure from, Nipál, correspond altogether with the seasons of its appearance and disappearance in England.

He then proceeds to describe in detail the several kind- of *Snipe* which occur in Nipál.

Two of these are so nearly related to the *common Snipe* of Europe, *Gallinago media*, Ray, that Mr. Hodgson is induced to regard them as being probably specifically identical with that bird : and he accordingly refers them to it as varieties, which are constantly distinguished from each other by the structure of the tail. In one of them the tail-feathers are fourteen or sixteen in number, and are all of the same form : in the other the tail-feathers vary in number from twenty-two to twenty-eight ; and the outer ones on either side, to the number of six, eight, or ten, differ remarkably from those of the middle, being narrow, hard, and acuminate. The latter bird may, however, be regarded as the representative of a species to which the name of *Gall. heterura* may be given.

The other two *Snipes* of Nipál are unquestionably distinct from those of Europe. They are described as the *solitary Snipe*, *Gall. solitaria*, Hodgs., and the *wood Snipe*, *Gall. nemoricola*, Ej.

In the *solitary Snipe* the wings are remarkably long, the upper surface, especially on the wings, is minutely dotted, barred, and streaked, with white intermingled with buff and brown ; and the *abdomen* is white, barred along the flanks with brown.

The *wood Snipe* has the general colouring of the plumage dark and sombre ; the wings short ; the *abdomen* and the whole of the under surface thickly barred with transverse lines of dark brown on a dusky white ground ; and a tail of sixteen or eighteen, or very rarely twenty, feathers.

Mr. Hodgson describes, with the greatest minuteness, each of these birds, and adverts with the fullest detail to their several habits and distinguishing peculiarities, as well of manners and of seasons as of form and plumage.

February 9, 1836.

Rev. F. W. Hope in the Chair.

A letter was read, addressed to the Secretary by M. Thibaut, and dated Malta, January 8, 1836. It communicated various particulars relative to the *Giraffes* belonging to the Society, which have recently been obtained by the writer and which are now in his custody, and may be translated as follows:—

“ Having learnt, on my arrival at Malta, that you were desirous of information on the subject of the four *Giraffes* which the Society has entrusted to my care, I regard it as a duty to transmit to you a short statement, by which you will become aware of the difficulties that I encountered in obtaining and preserving for the Society these interesting animals, which are now, I hope, altogether out of danger.

“ Instructed by Colonel Campbell, His Majesty's Consul General in the Levant, and desirous of rendering available for the purposes of the Zoological Society the knowledge which I had acquired by twelve years' experience in travelling in the interior of Africa, I quitted Cairo on the 15th of April, 1834. After sailing up the Nile as far as Wadi Halfa (the second cataract), I took camels, and proceeded to Debbat, a province of Dongolah; whence, on the 14th of July, I started for the desert of Kordofan.

“ Being perfectly acquainted with the locality, and on friendly terms with the Arabs of the country, I attached them to me still more by the desire of profit. All were desirous of accompanying me in my pursuit of the *Giraffes*, which, up to that time, they had hunted solely for the sake of the flesh, which they eat, and of the skin, from which they make bucklers and sandals. I availed myself of the emulation which prevailed among the Arabs, and as the season was far advanced and favourable, I proceeded immediately to the south-west of Kordofan.

“ It was on the 15th of August that I saw the first two *Giraffes*. A rapid chase, on horses accustomed to the fatigues of the desert, put us in possession, at the end of three hours, of the largest of the two; the mother of one of those now in my charge. Unable to take her alive, the Arabs killed her with blows of the sabre, and, cutting her to pieces, carried the meat to the head-quarters which we had established in a wooded situation; an arrangement necessary for our own comforts and to secure pasturage for the camels of both sexes which we had brought with us in aid of the object of our chase. We deferred until the morrow the pursuit of the young

No. XXXVIII.—PROCEEDINGS OF THE ZOOLOGICAL SOCIETY.



*Giraffe*, which my companions assured me they would have no difficulty in again discovering. The Arabs are very fond of the flesh of this animal. I partook of their repast. The live embers were quickly covered with slices of the meat, which I found to be excellent eating.

"On the following day, the 16th of August, the Arabs started at daybreak in search of the young one, of which we had lost sight not far from our camp. The sandy nature of the soil of the desert is well adapted to afford indications to a hunter, and in a very short time we were on the track of the animal which was the object of our pursuit. We followed the traces with rapidity and in silence, cautious to avoid alarming the creature while it was yet at a distance from us. Unwearied myself, and anxious to act in the same manner as the Arabs, I followed them impatiently, and at 9 o'clock in the morning I had the happiness to find myself in possession of the *Giraffe*. A premium was given to the hunter whose horse had first come up with the animal, and this reward is the more merited as the laborious chase is pursued in the midst of brambles and of thorny trees.

"Possessed of this *Giraffe*, it was necessary to rest for three or four days, in order to render it sufficiently tame. During this period an Arab constantly holds it at the end of a long cord. By degrees it becomes accustomed to the presence of man, and takes a little nourishment. To furnish milk for it I had brought with me female camels. It became gradually reconciled to its condition, and was soon willing to follow, in short stages, the route of our caravan.

"This first *Giraffe*, captured at four days' journey to the south-west of Kordofan, will enable us to form some judgement as to its probable age at present; as I have observed its growth and its mode of life. When it first came into my hands, it was necessary to insert a finger into its mouth in order to deceive it into a belief that the nipple of its dam was there: then it sucked freely. According to the opinion of the Arabs, and to the length of time that I have had it, this first *Giraffe* cannot, at the utmost, be more than nineteen months old. Since I have had it, its size has fully doubled.

"The first run of the *Giraffe* is exceedingly rapid. The swiftest horse, if unaccustomed to the desert, could not come up with it unless with extreme difficulty. The Arabs accustom their coursers to hunger and to fatigue; milk generally serves them for food, and gives them power to continue their exertions during a very long run. If the *Giraffe* reaches a mountain, it passes the heights with rapidity; its feet, which are like those of a *Goat*, endow it with the dexterity of that animal; it bounds over ravines with incredible power; horses cannot, in such situations, compete with it.

"The *Giraffe* is fond of a wooded country. The leaves of trees are its principal food. Its conformation allows of its reaching their tops. The one of which I have previously spoken as having been

killed by the Arabs measured 21 French feet in height from the ears to the hoofs. Green herbs are also very agreeable to this animal; but its structure does not admit of its feeding on them in the same manner as our domestic animals, such as the *Ox* and the *Horse*. It is obliged to straddle widely; its two fore-feet are gradually stretched widely apart from each other, and its neck being then bent into a semicircular form, the animal is thus enabled to collect the grass. But on the instant that any noise interrupts its repast, the animal raises itself with rapidity, and has recourse to immediate flight.

"The *Giraffe* eats with great delicacy, and takes its food leaf by leaf, collecting them from the trees by means of its long tongue. It rejects the thorns, and in this respect differs from the *Camel*. As the grass on which it is now fed is cut for it, it takes the upper part only, and chews it until it perceives that the stem is too coarse for it. Great care is required for its preservation, and especially great cleanliness.

"It is extremely fond of society and is very sensible. I have observed one of them shed tears when it no longer saw its companions or the persons who were in the habit of attending to it.

"I was so fortunate as to collect five individuals at Kordofan; but the cold weather of December, 1834, killed four of them in the desert on the route to Dongolah, my point of departure for Bebbah. Only one was preserved; this was the first specimen that I obtained, and the one of which I have already spoken. After twenty-two days in the desert, I reached Dongolah on the 6th of January, 1835.

"Unwilling to return to Cairo without being really useful to the Society, and being actually at Dongolah, I determined on resuming the pursuit of *Giraffes*. I remained for three months in the desert, crossing it in all directions. Arabs in whom I could confide accompanied me, and our course was through districts destitute of everything. We had to dread the Arabs of Darfour, of which country I saw the first mountain. We were successful in our researches. I obtained three *Giraffes*, smaller than the one I already possessed. Experience suggested to me the means of preserving them.

"Another trial was reserved for me: that of transporting the animals, by bark, from Wadi Halfa to Cairo, Alexandria, and Malta. Providence has enabled me to surmount all difficulties. The most that they suffered was at sea, during their passage, which lasted twenty-four days, with the weather very tempestuous.

"I arrived at Malta on the 21st of November. We were there detained in quarantine for twenty-five days, after which, through the kind care of Mr. Bouchier, these valuable animals were placed in a good situation, where nothing is wanting for their comfort. With the view of preparing them for the temperature of the country, to which they will eventually be removed, I have not thought it ad-

visible that they should be clothed. During the last week the cold has been much greater than they have hitherto experienced; but they have, thanks to the kindness of Mr. Bouchier, everything that can be desired.

"These four *Giraffes*, three males and one female, are so interesting and so beautiful, that I shall exert myself to the utmost to be of use to them. It is possible that they may breed; already I observe in them some tendency towards mutual attachment. They are capable of walking for six hours a day without the slightest fatigue.—G. T."

Mr. Gould, at the request of the Chairman, exhibited a specimen of the *Trogon resplendens*, Gould, and one of the *Trogon pavoninus*, Spix; and stated that he was indebted to the kindness of M. Natterer, who was present at the Meeting, for the opportunity of demonstrating, by the juxtaposition of the *Birds*, the correctness of the determination which he had made in regarding them as distinct species. Mr. Gould directed particular attention to the several characters and distinguishing marks which he had pointed out to the Society on March 10, 1835, and which had subsequently been published in the 'Proceedings,' part iii. p. 29, and again dwelt especially on the fact that in *Trogon resplendens* the hinder feathers of the back, which are fully 3 feet in length, hang gracefully far away beyond the tail; while in *Trogon pavoninus* the lengthened feathers of the back are rarely equal in length to the tail: in only one instance has M. Natterer known them, in the latter bird, to exceed the tail by so much as a quarter of an inch.

The reading was concluded of a paper "On the Anatomy of the *Lamellibranchiate Conchiferous Animals*, by Robert Garner, Esq., F.L.S.," a portion of which had been read at the meeting on November 24, 1835.

Founded principally on the author's individual observations, which have extended to the animals of several genera the anatomical structure of which is hitherto insufficiently known, this communication embodies also much information derived from the works of Poli, Cuvier, Bojanus, Home, M. de Blainville, and others. It is so arranged as to constitute a condensed memoir on the subject to which it is devoted, comprehending a summary of all that is yet known respecting it.

After some general remarks on the high importance of a knowledge of the structure of the animals that form those shells which have at all times attracted the attention of the curious, but to an acquaintance with which many naturalists, until of late years, have been content to limit themselves, Mr. Garner proceeds to speak of the position of the animal with respect to the shell; and thence to describe the variations in the form of the animal which occasion those appearances in the shell on which rest the primary subdivisions

made by conchologists among the *Lamellibranchiate Conchifera*. He regards *Anomia* as being in some measure intermediate between this order and the *Brachiopoda*; and in illustration of this view describes with some detail the structure of the animal of that genus.

Mr. Garner then adverts to the mode of growth of the shells and to their structure, and considers them in the variations in form which some of them undergo in their progress from the embryo to the adult state. He dwells also on the diversity of form assumed by the several groups of *Bivalves*, and shows in what manner these are occasioned by the form of the animal that produces the shelly coverings; referring to the foot especially as exercising in this respect a very remarkable influence.

The general review of the external form of the animal is succeeded by an account of the several systems of which it is composed. These are treated of in the following order: 1. Muscular system; 2. Nervous system; 3. Digestive system; 4. Circulating system; 5. Respiratory system; 6. Excretory system; 7. *Cilia* (and into this part of his subject the author enters with more than usual detail); and, 8. Reproductive system. Under each of these heads a rapid review is taken of the principal variations that occur in the order, and the illustrative examples referred to are generally numerous.

Finally, the author devotes a section of his paper to the diseases and the parasites of the animals on which he treats.

In conclusion, Mr. Garner submits the subjoined tabular view of an

#### Anatomical Classification of the LAMELLIBRANCHIATE CONCHIFEROUS ANIMALS.

With but one adductor muscle. MONOMYARIA, *Lam.*

Tentacles very long, not distinct from the *branchiæ*; an additional muscular system. . . . . *Anomia*.

Tentacles short, separate from the *branchiæ*.

No foot. . . . . *Ostrea*.

A foot.

*Branchiæ* disunited medianly.

Foot long, cylindrical; *ocelli* at the edge of the mantle . . . . . *Pecten*.

Foot short, thick, with a disk at the extremity, from the centre of which depends a pedicellated oval body; *ocelli* . . . . . *Spondylus*.

Foot compressed; no *ocelli*. . . . . *Lima*.

*Branchiæ* conjoined medianly . . . . . *Vulsella*.\*

With two adductor muscles. DIMYARIA, Lam.

Mantle without separate orifices or tubes.

- Foot slender, byssiferous; tentacles fixed .. *Avicula*.\*
- Foot thick, rounded, with a callosity ... *Arca*.
- Foot compressed, securiform ..... *Pectunculus*.
- Foot oval below, its margin tentacular, tentacles volute..... *Nucula*.
- Foot large, pointed anteriorly, bent at an angle... .. *Trigonia*.\*

Mantle with a distinct anal orifice.

Foot small, byssiferous.

Anterior muscle small; retractile muscles of the foot numerous; byssus large.

Byssus divided to its base ..... *Mytilus*.

Byssus with a common corneous centre... .. *Modiola*.

Anus furnished with a long ligulate valve..... *Pinna*.\*

Muscles equal; two pairs of retractile muscles only; byssus rudimentary .... *Lithodomus*.

Foot large, not byssiferous ..... *Unio*.

Mantle with a superior and inferior orifice; not elongated into tubes.

Mantle widely open ..... *Cardium*.

Mantle closed around the foot or byssus.

Foot short and discal, byssiferous; anterior muscle small .... *Tridacna*.\*

Foot small, cylindrical, bent at an angle; lips foliated .... *Chama*.\*

Foot small, sharp; lips simple ..... *Isocardia*.\*

Mantle with two produced tubes, or siphons.

*Branchiæ* not produced into the lower tube.

Mantle closed around the foot ..... *Loripes*.\*

Mantle open.

Tubes disunited; foot lanceolate.

Foot large, rather falciform; external *branchiæ* shortened; mantle tentacular; labial tentacles large..... *Donax*.

Foot small; external *branchiæ* shortened; edge of the mantle simple; tentacles small..... *Psanmobia*.

Foot moderate; external *branchiæ* as long as the internal; tentacles large; margin of the mantle entire ..... *Tellina*.

Foot small; *branchiæ* equal; mantle tentacular..... *Amphidesma*.

- Tubes more or less united ; foot various.
- Branchiæ* united medianly.
- Tubes small, partially divided ; foot very long, obtuse . . . . . *Cyclas.*
- Tubes small, united to the extremity ; foot very long and pointed . . . . . *Mactra.*
- Tubes large, foot short and prominent behind . . . . . *Venerupis.*
- Branchiæ* disunited medianly.
- Foot lanceolate, prominent behind ; tubes small, united . . . . . *Cytherca.*
- Foot securiform ; tubes larger and more or less distinct . . . . . *Venus.*
- Branchiæ* produced into, or attached to, the lower tube ; tubes always united.
- Mantle only open inferiorly for the protrusion of the foot.
- Tubes small ; lips long.
- Foot small ; *branchiæ* of each side united into one . . . . . *Pandora.*
- Foot larger ; *branchiæ* separate . . . *Corbula.*
- Tubes long ; lips small.
- Foot not byssiferous ; tubes large and coriaceous . . . . . *Mya.*
- Foot byssiferous ; tubes moderate . . *Hiattella.*
- Mantle open anteriorly.
- Foot long, club-shaped ; tubes short . . *Solen.*
- Foot very short, rounded.
- Two distinct adductor muscles, the anterior one situated below a reflected portion of the mantle uniting the beaks instead of a cartilage ; tentacles large . . . . . *Pholas.*
- Body very elongated ; adductor muscles united ; end of the mantle with two calcareous pieces ; tentacles small ; no cartilage nor reflected portion of the mantle . . . . . *Teredo.*

For the anatomy of the several genera marked in the above table with an (\*), the author acknowledges himself indebted either to Cuvier, Poli, or M. de Blainville. \*

He refers occasionally to other genera, besides those enumerated, as included in the groups distinguished by the characters given above.

Mr. Garner's paper was accompanied by numerous drawings of the objects and structures described in it, which were exhibited in illustration of his communication

February 23, 1836.

The Rev. J. Barlow in the Chair.

Mr. Gould, at the request of the Chairman, exhibited specimens of numerous *Birds* forming part of the Society's collection; and directed the attention of the Meeting to those which he regarded as the most interesting among them.

He stated that one of them was especially curious as exhibiting a form of *Insessorial Bird*, not safely referrible to any known family; on which account he proposed to consider it as the type of a group to be designated

#### PARADOXORNIS.

*Rostrum* altitudine longitudinem superans, ad basin vibrissis instructum: *mandibulâ superiore* valdè compressâ; culmine acuto, valdè arcuato; tomio edentulo, apicem versus valdè incurvo, ad basin producto: *mandibulâ inferiore* ad basin latâ, robustâ; tomio emarginato.

*Nares* parvæ, rotundatæ, pone rostrum sitæ.

*Alæ* breves, rotundatæ: *remigibus* 4tâ, 5tâ, et 6tâ longioribus.

*Cauda* mediocris, gradata.

*Tarsi* robusti, læves.

*Pedes* magni, subtùs lati: *digitis* magnis; *halluce ungueque postico* maximis.

*Ptilosis* ampla, laxa.

The breadth of the under surfaces of the feet is so great as to indicate considerable powers of grasping.

PARADOXORNIS FLAVIROSTRIS. *Par. arenaceo-brunneus, subtùs pallidior; capite nuchalque rufa-brunneis; auribus partim aterrimis, facie guttureque albis nigro variis, pectore nigro.*

Long. tot. 8 unc.; *alæ*, 3½; *caudæ*, 4½; *tarsi*, 1½; *hallucis* (arcuati), ¾.

*Rostrum* splendide aurantiaco-flavum; *pedes* cœrulescentes.

*Hab.* (verosimiliter) in Nepaliâ.

Mr. Gould regarded another of the *Birds* exhibited as the representative of a new type among the *Thrushes*; and characterized it as the type of the genus

#### ACTINODURA.

*Rostrum* subcompressum, subarcuatum, ad apicem subemarginatum.

*Nares* basales, lineares, operculo magno tectæ.

*Alæ* molles, breviusculæ, concavæ; *remige* 1mâ brevissimâ, 4tâ 5tâque longioribus.



*Cauda* mollis, elongata, gradata.

*Tarsi* elongati.

*Pedes* majusculi: *halluce ungueque postico* longiusculis.

*Ptilosis* mollis, laxa.

The wings and tail in the birds of this group are transversely barred. The typical species are crested.

*ACTINODURA EGERTONI.* *Act. cristata*; *suprà nitidè rufo-brunnea olivaceo tincta, subtùs pallidè rufo-brunnea*; *crista, occipite, genisque brunnescenti-cinereis*; *remigibus ad basin rufis, pogoniis nigro flavoque fasciatis*; *secundariis nigro brunneoque fasciatis*; *rectricibus sordidè rufo-brunneis, lineis saturationibus transversim notatis, alboque apiculatis.*

Long. tot.  $8\frac{1}{2}$  unc.; *alæ*,  $3\frac{3}{4}$ ; *caudæ*,  $4\frac{3}{4}$ ; *tarsi*,  $1\frac{1}{4}$ ; *rostri*, 1.

*Rostrum pedesque* brunnei.

*Hab.* in Nepaliâ.

The specimen described was presented to the Society by Sir P. Grey Egerton, Bart., M.P.

The following species were also characterized by Mr. Gould.

*CORVUS PECTORALIS.* *Corv. niger caruleo iridescentis*; *maculâ nuchali latâ fasciâque lunatâ pectorali albis.*

Long. tot. 17 unc.; *rostri*, 2 $\frac{1}{2}$ ; *alæ*,  $11\frac{1}{2}$ ; *caudæ*,  $7\frac{1}{2}$ ; *tarsi*, 2 $\frac{1}{2}$ .

*Rostrum pedesque* nigri.

*Hab.* in Chinâ.

*Statura* *Corv. Corone.*

*CORVUS CURVIROSTRIS.* *Corv. niger chalybeo-caruleo purpureoque iridescentis*; *maculâ dorsali fasciâque latâ ventrali albis.*

Long. tot. 17 unc.; *rostri*, 2 $\frac{1}{2}$ ; *alæ*,  $12\frac{1}{2}$ ; *caudæ*,  $7\frac{1}{2}$ ; *tarsi*, 2 $\frac{1}{2}$ .

*Rostrum pedesque* nigri.

*Hab.* in Africâ Occidentali.

Nearly allied to the *Corv. scapulatus*, Daud., a species of Southern Africa; but smaller in all its proportions, and possessing a bill which is rather feeble and considerably curved.

*PRIONITES CÆRULIGRÆS.* *Pri. iridescenti-olivaceo-viridis, pteromatibus secundariisque magis viridibus*; *caudâ ad basin viridi, dein cœruleâ, ad apicem nigra*; *capite caruleo, fasciâ frontali flavescenti-viridi, linedque nigra a nare per oculum auremqve utrinque ductâ et finem versus cœruleo submarginatâ, notatâ.*

Long. tot. 18 unc.; *rostri*,  $1\frac{1}{4}$ ; *alæ*,  $5\frac{1}{4}$ ; *caudæ*,  $11\frac{1}{4}$ ; *tarsi*,  $1\frac{1}{4}$ .

*Rostrum* nigrum; *pedes* brunnei.

*Hab.* in regione Tamaulipas dictâ.

The two middle tail-feathers have their shafts naked towards the end, as is usual in the genus, for the space of 2 inches; and the bird is decorated with the ordinary tufts of black feathers springing from the lower part of the throat.

**PLYCTOLOPHUS PRODUCTUS.** *Plyct. rostro elongato; brunneus, capite muchoque pallidè brunnescenti-griseis, harum dorsique plumis saturatiore marginatis; uropygio, ventre, crissoque saturatè rubris; gutture pectoraque flavis, illo ad gulam rubro tincto; alarum flexurâ subtilis flavâ olivaceo-rufa tincta; rectricibus ad basin auran-tiaco-flavo brunneoque fasciatis; remigum pogniis internis ad basin subtilisque sordidè rufo brunneoque fasciatis.*

Long. tot. 15 unc.; alæ, 10; caudæ, 6; tarsi, 1½; rostri, 2½.

Rostrum pallidum; pedes saturatè brunnei.

*Hab.*

The bill is exceedingly produced, the upper mandible extending fully one half of its total length beyond the lower.

The bird belongs to that group which has been distinguished by M. Kuhl among the *Plyctolophi* under the name of *Nestor*.

A paper by Mr. Owen was read, entitled, "Descriptions of some new or rare *Cephalopoda*, collected by Mr. George Bennett, Corr. Memb. Z.S." The subjects referred to in it included specimens of *Cranchia scabra*, Leach; a small nondescript *Loligo*; the head and principal viscera of a *Decapodous Dibranchiate Cephalopod* from Port Jackson; a small nondescript species of *Octopus*; and a very small specimen of *Argonauta hians*, with its *Cephalopodous* inhabitant (*Ocythoe Cranchii*, Leach), and a large cluster of ova: all of which were exhibited, in illustration of the communication, by permission of the Curators of the Museum of the Royal College of Surgeons, of which collection they now form part.

The specimen of *Cranchia scabra* was taken by Mr. George Bennett in a towing net in lat. 12° 15' S., long. 10° 15' W.; and was at first regarded by him as a species of *Medusa*: and Mr. Owen observes, that from the uncommon form which this very remarkable *Cephalopod* presents, one cannot feel surprised that it should have been, at the first view, referred by its captor to a *Radiate* family, with which the *Cephalopods* bear, in more than one respect, an analogical relation.

As the type of its genus Mr. Owen considers the *Cranch. scabra* with reference to the generic characters that separate *Cranchia* from the neighbouring groups: from *Loligo* and *Onychoteuthis* it is distinguished by the continuity of its mantle with the dorsal parietes of the head; and from *Sepioteuthis*, *Sepiola*, and *Rossia* by the proportions and position of its fins. The form of the fins alone is evidently insufficient in *Cephalopods* for generic distinctions, as will appear from considering the variations in this respect that occur in the several species of the well-marked genus *Onychoteuthis*, Licht.; and also in the several species of *Loligo* as at present restricted, some of which, especially *Lol. brevis*, Blainv., make so close an approximation to *Cranch. scabra* in the rounded contour, as well as the terminal position, of their fins, that were it not that the exterior margin of the mantle is in all of them free on its dorsal aspect, the latter *Cephalopod*, notwithstanding its singular form, could not be separated generically from the *Loligines* on external characters alone.

As in the figures published by Ferussac of the *Cephalopods* named *Cranch. cardioptera* by Péron and *Cranch. minima* by himself, the anterior margin of the mantle appears to be free on its dorsal aspect, similarly to that of the true *Loligines*, it must be doubted whether these species are correctly referred to the genus *Cranchia*: and the same doubt may perhaps be extended to *Cranch. Bonelliana*, Fer., in the description of which no mention is made of the adhesion or otherwise of the mantle to the posterior part of the head. This adhesion Mr. Owen regards as an essential character of the genus.

The specimen of *Cranchia scabra* on which the genus was founded by Dr. Leach, having been imperfect in some of its parts, Mr. Owen carefully describes the species anew from the perfect individual obtained by Mr. George Bennett; which is smaller than the original specimen, measuring only 1 inch 8 lines in total length to the end of the outstretched tentacle. The body is remarkable for its great flaccidity, which is owing to the very small space occupied by the viscera: these are situated at its anterior part, and not, as in *Loligopsis*, at the bottom of the sac. Besides this disproportion between the bulk of the viscera and the capacity of the containing sac, *Cranchia* has other relations with *Loligopsis* in the absence of the infundibular valve, which exists in all the other *Decapodous Cephalopods*; and in the non-articulation of the base of the siphon by a double ball and socket joint to the internal surface of the ventro-lateral parts of the mantle. In the *Decapodous Cephalopods* generally the funnel is articulated to the mantle, at the anterior part of its base, by two ball and socket joints, the projection being on the mantle and the socket on the funnel; both consisting of cartilage, covered with a fine synovial membrane. The projecting cartilage is of an oval form in the *Cuttle-fish*: but in *Loligo* it forms an elongated ridge; which in *Onychoteuthis* commences at the anterior margin of the mantle and extends one third down the sac, forming two thin lateral cartilaginous *laminae* placed rather towards the ventral aspect of the mantle: an elongated groove in the opposite sides of the funnel plays upon each of these ridges. In *Loligopsis* the sides of the funnel adhere to the corresponding cartilaginous *laminae*, which differ from the lateral cartilages of other *Decapodous Cephalopods* only by their greater length and tuberculated form. In *Cranchia*, as in the *Octopoda*, these cartilages are entirely wanting; but the ventral *parietes* of the base of the siphon become expanded, thin, and transparent; and adhere to and become continuous with the corresponding parts of the mantle.

Mr. Owen regards as new the species of *Loligo* referred to, and describes it under the name of *Lol. laticeps*: four specimens of it, the largest of which measures only 1½ inch from the extremity of the mantle to the end of the outstretched tentacle, were obtained by Mr. George Bennett among the Sargasso weed, in lat. 29° N., long. 47° W. When alive they were of a fine purple colour with dark red spots. The specimens are now destitute of colour on the fins and on the under surface of the third and fourth pairs of arms, and the spots are but few on the under part of the head and mantle;

on the inner surface of the first, second, and third pairs of arms the dark pigment is disposed in broad, irregularly shaped, transverse bands, passing across between each of the pairs of suckers.

The head, as is indicated by the trivial name, is comparatively broad; and the arms which it supports are relatively longer than in the *Loligines* generally, the second and third pairs being nearly equal in length to the trunk. The body is subcylindrical and conical, gradually diminishing in circumference till it terminates in a point at the posterior margin of the fins, which do not extend conjoined together beyond this part. The fins are terminal and dorsal, a space of about half a line intervening between their origins anteriorly, whence their bases converge and are united at the apex of the trunk: their superior contour is an obtuse angle; their inferior margin is rounded.

In the *Cephalopod* described as *Cranchia cardioptera*, Pér., to which the species under consideration has a superficial resemblance, the terminal fins have a semicircular contour, and their origins are widely separated anteriorly; they also extend beyond the termination of the trunk: the trunk, moreover, is broader in proportion to the head, and does not diminish gradually to a point, but is rounded off at the posterior extremity. The *Cranchia minima* of Férussac may be at once distinguished from *Lol. laticeps* by the extension of the trunk beyond the small rounded fins, which gives a trilobate contour to the termination of the body.

In internal organization *Lol. laticeps* agrees with the other *Loligines* whose anatomical structure has been ascertained.

The fragments of the *Decapodous Cephalopod* obtained at Port Jackson are too imperfect to allow of their being satisfactorily referred generically: they may, however, have belonged to a species of *Loligo* or of *Sepioteuthis*. As in some species of both these genera, the outer lip was characterized by eight short processes, on the inner surface of which, at the extremity of each, were three or four small suckers, attached by peduncles, and having precisely the same structure as those of the eight large exterior arms. In this repetition of the structure of the external series of cephalic processes there is an evident analogy to the different series of labial processes of *Nautilus*. In some species, as for instance *Lol. Pealii*, Le Sueur, the acetabuliferous labial processes are more developed than in Mr. George Bennett's specimen. In *Lol. corolliflora*, Til., they have been compared by Bojanus to the internal shorter series of tentacles of a *Medusa*; affording another evidence of the analogy, though remote, between the *Cephalopods* and the *Radiata*.

The two lateral processes at the termination of the *rectum* being, in this instance, evidently adapted to form a valve for the closure of the *anus*, Mr. Owen was induced to examine the corresponding structure in other species; and to conclude, from his examination, that similar appendages, although varying in form and position, perform the same office in other *Decapoda*. The slenderness of the anal processes in *Onychoteuthis* and *Loligopsis* being such as to preclude the possibility of their acting as mechanical guards, it is in-

ferred that they may perform the function of instruments of sensation, and convey the stimulus to contract to the muscular parts that close the outlet of the alimentary canal. In the *Octopoda* the anus is not similarly provided; and, indeed, it may be generally remarked that valvular or other guards are developed among the *Cephalopoda* only in such as have the power of propelling themselves forwards in the water.

The generative apparatus forming part of the fragments referred to, Mr. Owen examined it with some care. His most important observation relative to these organs relates to a small round flat fleshy body, attached near the anterior aperture of each of the two nidamental glands, destitute of any outlet, and of an orange colour. A single bilobed organ, of a bright orange or red colour, similarly connected with the anterior extremities of the nidamental glands, exists (as was long since pointed out by Swammerdam) in the *Cuttle-fish*. In *Sepiolo* the corresponding body is single, and of a rose colour. And there exist two such bodies in a small *Cephalopod* taken by Capt. Ross on the shore of Boothia, which Mr. Owen has recently described under the name of *Rossia palpebrosa*. Considering the bright colours which these bodies commonly present, and their structure and relations to the generative apparatus, Mr. Owen feels authorized in regarding them as analogous to the suprarenal bodies, hitherto regarded as peculiar to the *Vertebrate* series.

The small *Octopus* described by Mr. Owen was obtained by Mr. George Bennett, like the *Loligo laticeps*, among the Sargasso weed; which forms, as it were, a bank in the midst of the ocean, affording shelter to many marine animals of littoral genera. The condition of the generative organs would appear to indicate that the specimens brought home were not adult, and the species consequently may be assumed to attain a greater size than that of the largest individual in the collection, which measures only  $1\frac{1}{2}$  inch from the end of the sac to the extremity of the longest arm. Of the eight arms the first, or dorsal, pair is the longest, as is the case in many species of *Octopus*; the second pair is nearly of the same length as the first; the third pair (which in the *Decapods* is commonly the longest) is scarcely half the length of the first; the fourth pair is nearly two thirds of the length of the first. The musculo-membranous web, which is usually extended between the bases of all the arms in the *Octopi*, is in this species developed to the ordinary extent between the four dorsal arms only: the webs between the second and third arms, and the third and fourth arms, on each side, are very short; that between the fourth pair is wanting. From this peculiarity Mr. Owen proposes to name the species *Octopus semipalmatus*.

Its anatomy generally agrees with that of *Oct. vulgaris*.

The remaining specimens described by Mr. Owen are the shell and animal of *Argonauta hians*, Lam. They were obtained in lat.  $4^{\circ}$  S., long.  $17^{\circ}$  W. The animal was alive at the time of its capture by Mr. George Bennett, but fell out of its shell when it was moved on the following morning. A mass of eggs was then exposed in the involuted portion of the shell, which increased so greatly in size after

being put into spirit that they now occupy so much of the cavity that not more than one third of the body of the parent could be forced into it.

Referring to the fact that the *Cephalopods* hitherto found in the shells of each species of *Argonauta* have invariably presented characters as specifically distinct as those of the shells in which they were found, each species of animal having appropriated to it its own peculiar species of shell—a fact which extends not only to *Arg. Argo*, *Arg. tuberculata*, and *Arg. hians*, but also to an undescribed species obtained in the Indian seas by Capt. P. P. King, R N., for which Mr. Owen proposes the name of *Arg. rufa*, he is disposed to believe that the shell really belongs to the animal that occurs in it. On this account he speaks of the animal in question as the *Arg. hians*, discarding the name of *Ocythoe Cranchii* applied to it by Dr. Leach.

In carefully describing the specimen before him, Mr. Owen corrects some errors in the account given of the animal by its original describer, and furnishes various particulars which, from the contracted state of his individuals, were unobserved by Dr. Leach. He also adverts to the statement made by that able zoologist, that in this species all the internal organs are essentially the same as in *Octopus*; and remarks that *Arg. hians*, like *Arg. Argo*, recedes from the naked *Octopods* and approaches the *Decapods* in the structure of the branchial hearts, which are provided with a fleshy appendage, in the form of the appendages of the *vena cava*, which are shorter and thicker; and in the relative position of the lozenge-shaped ink-bag, which is not buried in the substance of the liver, but lies in its anterior concavity: the inferior salivary glands are also relatively smaller. The following differences, as compared with *Octopus*, occur in other internal organs which adhere to the type of structure that characterizes the *Octopodous* tribe of the *Dibranchiata*: the laminated pancreatic bag is of a triangular form, and not spirally disposed; the two oviducts are devoid of the circular laminated glands which surround them in *Octopus* about the middle of their course; they are also disposed in four or five convolutions as they pass behind the roots of the *branchiæ*; and they terminate at a relatively greater distance from the base of the funnel.

Mr. Owen then describes various portions of the internal structure of *Argonauta*; and especially its brain, its principal nervous cords, and the lateral muscles, here at their minimum of development, which attain in *Nautilus*, as the muscles of attachment to the shell, so enormous a size.

The eggs are in nearly the same state of development as those which have been described by Mr. Bauer and by Dr. Roget; and consequently afforded no conclusive proof as to the nature of the connexion of the animal with the shell. In one of them, from the form of the opaque body contained within it, Mr. Owen for a moment entertained the idea that the *nucleus* of the real shell might be found: on tearing open, however, the external tissue, the contained substance turned out to be nothing more than the yolk, separated by an intervening stratum of clear fluid from the transparent mem-

*brana vitelli*; and the whole substance of the opaque mass separated into the flakes, granules, and globules of oil, of which the *vitellus* is usually composed; there was not a tract of any consistent parts of an embryo, nor the slightest particle of calcareous matter.

Mr. Owen concludes his communication by a tabular view of the *Cephalopoda*, exhibiting the external and internal characters common to the entire class; those of the several orders and families comprised in it, and the names of the genera included in each family.

4 8 254 4 1 621

.

8

8

March 8, 1836.

William Yarrell, Esq., in the Chair.

Mr. Ogilby read a paper, entitled "Observations on the opposable power of the Thumb in certain *Mammals*, considered as a zoological character: and on the Natural Affinities which subsist between the *Bimana*, *Quadrumana*, and *Pedimana*."

In the summer of 1829 it occurred to Mr. Ogilby to observe that two living individuals of *Mycetes Seniculus* did not use the extremities of their anterior limbs for the purpose of holding objects between the fingers and thumb, as is common among the *Quadrumana*; and he ascertained also, on closer examination, that the thumb, as it has generally been considered, was not in these animals opposable to the other fingers, but originated in the same line with them. Struck with the apparent singularity of the fact, he was induced to pay particular attention to all the other animals, referred by zoologists to the *Quadrumanous* family, to which he had access; and the continued observation of more than six years has assured him that the non-opposable character of the inner finger of the anterior extremities, which he first observed in the specimens referred to, is not confined to the genus *Mycetes*, but extends throughout the whole of the genera of the South American *Monkeys*, individuals of all of which have now been seen by him in the living state. In none of them, consequently, does a true thumb exist on the anterior limbs: and as a further consequence it follows, that the whole of them have hitherto been incorrectly referred to the *Quadrumana* by zoologists generally. There is a solitary exception among descriptive writers from this mode of viewing the subject, D'Azara (as Mr. Ogilby has very recently become aware) having spoken of the anterior extremities of some of the species observed by him as having five fingers originating on the same line with each other: but the statements of that original observer appear, in this respect, either to have been unnoticed by other authors or to have been passed by as undeserving of attention, so entirely were they at variance with the preconceived notions of all.

Of the eight natural genera which include all the known *Monkeys* of the Western Hemisphere, one, *Ateles*, is entirely destitute of a thumb, or has that member existing only in a rudimentary form beneath the skin. In five others, *Mycetes*, *Lagothrix*, *Aotus*, *Pithecia*, and *Hapale*, the anterior thumbs (using the ordinary expression for them) are placed absolutely on the same line with the other fingers, are of the same form with them, act invariably in the same direction, and are totally incapable of being opposed to them. In the two remaining genera, *Cebus* and *Callithrix*, the extremities of the anterior limbs have a greater external resemblance to the hands of *Man* and of the *Monkeys* of the Old World; the internal finger is placed



further back than the general line of the other fingers, and has, on that account, when superficially noticed, the semblance of being opposed to them; but, as has been correctly observed by D'Azara with reference to *Ceb. capucinus*, it is less separated than in *Man*: it is, besides, of precisely the same slender form with the rest, is weaker than them, absolutely without power of opposition to them, and habitually acts in the same direction with them. The impression derived from contemplating the hands of the Old World *Monkeys* might induce the belief that the extremities of the *Cebi* are similarly constituted: but if the knowledge that in *Myrcetes*, *Pithecia*, &c, there are no opposable thumbs, lead to a close observation of the anterior extremities of the *Cebi*, it will be found that they do not act as hands, and cannot be considered as possessing the powers of those organs. From innumerable observations of many species of that genus Mr. Ogilby states that it was very evident, notwithstanding the fallacious appearance occasioned by the backward position of the organ, that they had not the power of opposing the thumb to the other fingers in the act of prehension: and, in fact, their principal power of prehension seems to be altogether independent of the thumb, for, generally speaking, that member was not brought into action at all, at least not simultaneously with the other fingers, but hung loosely on one side, as Mr. Ogilby has seen it do, in like circumstances, in the *Opossums*, *Phalangiers*, and other arboreal *Mammals*: when actually brought into play, however, the thumb of the *Cebi* invariably acted in the same direction as the other fingers. *Cebus* consequently agrees in the character of non-opposableness of thumb with the nearly allied genera. And in this hitherto unsuspected peculiarity zoologists obtain a far more important character by which to distinguish the *Monkeys* of the Old and New World than that hitherto relied on, the comparative thickness of the *septom narium*, or than the accessory aids afforded by the absence of cheek-pouches and callosities. Hence, according to Mr. Ogilby, as the *Monkeys* of America have now been ascertained to be destitute of anterior hands, they can be no longer included among the *Quadrumana*; and he proposes in consequence to regard them as *Pedimana*. He considers that in the latter series, the *Monkeys* of America form a group parallel to that of the *Monkeys* of the Old World among the *Quadrumana*: and viewing the *Quadrumana* as consisting of two primary groups, that of which *Simia* forms the type, and the *Lemuridae*, he proceeds to analyse the *Pedimana* in order to determine whether any group analogous to the *Lemurs* exists in it. He finds such a group in the association of the genera *Didelphis*, *Cheironectes*, *Phalangista*, *Petaurus*, and *Phascogaleos*, (together with a new genus, *Pseudochirus*, which he has found it necessary to separate from *Phalangista* as at present constituted); and for this association he uses the name of *Didelphidae*. Aware that the modifications observable in the dentary systems of these several genera have been regarded by many zoologists as betokening a difference of regimen, which has led to their being viewed as constituting distinct families; he, in the first place, states, as the

result of his observation of the habits of the numerous species of all these genera which have been, from time to time, exhibited in the Society's Gardens, that there is little or no difference, in this respect, between the *Opossums* and *Phalangers*, but that all are equally omnivorous; and then proceeds to discuss the modifications that exist among them in the number and form of the several kinds of teeth, which are not, in his estimation, so very different in reality between the *Opossums* and *Phalangers* as they appear to be at first sight. In further support of his opinion that this association of genera forms a natural family, Mr. Ogilby refers to the gradual and uninterrupted transition from the naked-prehensile-tailed *Opossums* of South America, through the equally naked-tailed *Couscous*, *Balanitia*, of the Indian Isles, to the true *Phalangers*; and from these to the *Petaurists* directly on the one hand, and by means of the *Pseudocheirs* to the *Koalas* on the other.

On the prehensile power of the tail Mr. Ogilby particularly insists, as on a faculty possessed by the greater number of the *Pedimana*, and as one which is, in truth, almost confined to them: only three known genera belonging to other groups, *Synetherus*, *Myrmecophaga*, and *Cercoleptes*, being endowed with it. He remarks on this faculty as on one of considerable importance, affording as it does, in some degree, a compensation for the absence of opposable thumbs on the anterior limbs. Combined with the prehensile tail, in every known instance, whether among the *Pedimana* or in other groups, is a slowness and apparent cautiousness of motion, not observable in any of the *Quadrumana* except in the *Nycticebi*. In none of the true *Quadrumana* is the tail prehensile.

Another evidence of the distinctness, as two groups, of the *Quadrumana* and the *Pedimana*, is furnished by their geographical distribution. The *Quadrumana* are strictly confined to the limits of the Old World: the *Pedimana*, almost as exclusively to the New World; for Mr. Ogilby considers the continent of Australia to belong more properly to America than to Asia. The very few apparent exceptions that occur to this latter position are in the presence of some species of *Phalangers* in the long chain of islands that connect the south-eastern shores of Asia with the north-eastern coast of Australia; islands which may, in truth, be fairly regarded as belonging partly to the one and partly to the other, and the productions of which might consequently be expected to partake of the character of both.

Mr. Ogilby subsequently adverts to another *Pedimanous* animal, the *Aye-Aye* of Madagascar, constituting the genus *Cheiromys*; respecting the affinities of which he speaks with hesitation, because, having never had an opportunity of examining the animal itself, he is acquainted with its characters only at second-hand. He is, however, disposed to regard it as representing a third group among the *Pedimana*, to be placed in a station intermediate between the *Monkeys* of the New World and the *Didelphidæ*. With the latter he would, in fact, be disposed to associate it, were it not destitute of the marsupial character which belongs to all the other animals com-

prised in that group. In some of the *Didelphidæ*, the *Phalangers* and *Petaurists* especially, there is a marked approximation to that rodent form of incisor teeth which obtains in *Cheironomys*, and which has hitherto been regarded as especially attaching to it an abnormal character.

*Man* is the only other animal furnished with hands; and however distinct he may be as regards his moral and intellectual powers, he must, zoologically, be considered on physical grounds. By his structural characters he becomes associated with all those of which mention has previously been made in Mr. Ogilby's communication, although he unquestionably constitutes among them a peculiar group, sensibly exalted above the rest, as well as above all other *Mammals*.

Mr. Ogilby concludes by proposing the name of *Cheiropedes*, *Cheiro-poda*, to include all the *Mammals* that are possessed of hands; and by subjoining a table of the families and genera included in this order, as he regards it. Of this table the following may be regarded as an abstract.

Class. MAMMALIA

Order. CHEIROPODA,

Mammals with opposable thumbs

On the anterior extremities only . . . . . BIMANA.

On both anterior and posterior extremities . . . . . QUADRUMANA

And with anthropoid teeth,

*Monkeys of the Old World.*

— abnormal teeth,

*Lemuridæ.*

On the posterior extremities only . . . . . PEDIMANA.

And with anthropoid teeth,

*Monkeys of the New World*

— rodent teeth,

*Cheironomys.*

— abnormal teeth,

*Didelphidæ.*

March 22, 1836.

Richard Owen, Esq., in the Chair

The following Notes by Mr. Martin on the visceral and osteological Anatomy of the *Çariama*, *Dicholophus cristatus*, Ill., were read.

"The *Çariama*, of the examination of which I made the following notes, was sent to the Society by its President, the Earl of Derby, in November, 1835. It was a female, and had died from the effects of extensive visceral inflammation.

"The *trachea*, without making any curvature or loop, passed straight into the chest. The *œsophagus*, immediately before its entrance, presented a gentle but evident dilatation. On carefully dissecting away the abdominal muscles, the gizzard appeared just below the *apex* of the *sternum*, lying in a vertical position, so that its defined abdominal edge seemed a continuation of the sternal *apex*. On each side above was a large air-cell extending along the ribs, but separated from what may be termed the thoracic air-cell; and on each side below was another, occupying the iliac region, the membrane being fixed to the pubic bones. From the gizzard a kind of fatty *omentum*, if the term be allowed, stretched over the intestines; this *omentum*, however, was only the peritoneal membrane lining the abdominal muscles, having fat disposed in a foliaceous manner between its two *laminae*. Below the gizzard lay the *duodenum*, its loose fold sweeping round that *viscus* in a horseshoe form. Each lobe of the liver was very soft, and, as it were, decomposed in structure, of a rose pink colour, and glued firmly to the peritoneal cavity by a layer of coagulated lymph half an inch thick; and the abdominal cavity was filled with bloody *serum*.

"The gizzard was of large size, thin, but muscular, with a radiating tendinous patch on each side, of the size of half-a-crown. It was lined with a strong coriaceous membrane, of a yellowish colour, irregularly puckered. The *proventriculus* was lined for the extent of 2 inches above its entrance into the gizzard with a zone of thickly set glands.

"The *duodenum*, on leaving the gizzard, made a sweep of 6 inches, from the right to the left, round that *viscus*, and then, returning suddenly upon itself, embraced in this flexure, as usual, the *pancreas*. The whole of the small intestines were disposed in loops of a similar nature, but of less extent. The *duodenum* at its commencement was a little enlarged; but not into anything like a pyloric appendix as in the *Adjutant*.

"The gall-bladder was of the size of a walnut; and the biliary duct,

an inch in length, entered the *duodenum* at its second turn, where the reflected portion returns to the gizzard. At half an inch from the biliary duct an hepatic duct entered; and near this two pancreatic ducts: but the *pancreas* was so disorganized that I failed in all endeavours to make out more.

"The total length of the small intestines was 2 feet 10 inches; of the large, 5 inches, reckoning from the base of the *cæca*, which were double, closely adherent to the small intestines, and 7½ inches long. The *cloaca*, at its entrance into which the large intestine was surrounded by a sphincter-like valve, was divided by a fold into two portions: beneath this fold entered the ureters and oviduct; and below and between the ureters was the *bursa Fabricii*. The upper portion of the *cloaca* was lined with a villous coat, but the part below had a smooth mucous lining. The villi of the large intestine were disposed in longitudinal lines; but this was not the case in the *cloaca*, where the villous surface was uniform. The length of the *cloaca* was 1 inch and 5 lines; its circumference 1½ inch.

"The gizzard was filled with undigested flesh, feathers, and pebbles.

"The intestines were full of *pus*, and their villous lining was highly inflamed.

"In the whole of the visceral arrangement a close affinity may be observed to the *Grus* tribe. In the *Stanley Crane* (*Anthropoides paradisaus*, Bechst.) the intestines are similarly disposed in folds or loops, and the two *cæca*, given off 6 inches from the *anus*, are 4 inches long. In the *Stanley Crane*, however, the muscular coat of the gizzard is thicker than in the *Cariama*, being in some parts an inch across, while in the latter bird it is about ¼ of an inch; hence there is in this point an index of a less vegetable regimen. In the *Stanley Crane*, the total length of the intestines is 5 feet 3 inches. In the *Cariama*, it is 3 feet 5½ inches.

"In its general aspect the skeleton of the *Cariama* is very remarkable. The comparative shortness of the neck, the compactness of the chest and stoutness of the ribs, together with the abbreviated condition of the wings, appear as if out of harmony with the length of the limbs, especially of the *tibia* and *tarsus*; while the toes concluding this length of limb are short, the hinder one being situated high and not touching the ground.

"The skull, as in the *Cranes*, is arched above, but rises on the *vertex* to a more abrupt elevation; the arch in the *Stanley Crane* being a regular sweep from the base of the upper mandible to the *occiput*. The orbits are large, and are separated by a bony *septum* with a central and posterior perforation and a slight superior fissure. In the *Stanley Crane*, the central perforation is large and continuous with the posterior; the superior fissure being also more decided. The supra-orbital process of the *lacrymal bone* is large, prominent, and directed backwards, as it is in the *Stanley Crane*. There is also a large pos-

terior orbital process, forming part of the rim of the orbit; and before the *os quadratum* there projects forwards and downwards a process of the temporal bone, analogous, I suspect, to the zygomatic process; for the long bone stretching to the upper mandible from the *os quadratum*, which in the present bird is remarkably slender, cannot be called a true *zygoma*. Between these two processes is the depression for the temporal muscle. The nostrils are large, wide, ovoid, and open.

"In the lower jaw there is nothing remarkable. It may be observed, however, that a slit, or long foramen, marks the union of the basal to the anterior portion of the bone, instead of a simple suture. The coronoid process is very small.

"The *vertebræ* are short and stout, and resemble more those of a *Gallinaceous Bird* than of a *Crane*; in fact, they differ little from those of the *crested Curassow*. Their number is as follows:

Cervical .....	13
Dorsal .....	7
Sacral .....	12 apparently.
Caudal .....	8

But that a rib arises on each side from it, the last or 7th dorsal *vertebra* is so completely consolidated to the *sacrum* that it cannot be distinguished from that portion of the column;—this is also the case, in the *black-crested Curassow*, with the last dorsal *vertebra*; and in the *Stanley Crane*, with the last two.

"The *sternum* differs considerably in figure from that of the *Stanley Crane*. For, independently of the absence of a channel in the anterior edge of the keel for the reception of the *trachea*, the keel is neither so deep, nor is its anterior *apex* even in contact with the point of the *os furcatum*, (there being a firm consolidation in the *Stanley Crane*), while its posterior edge is narrow and prolonged as in *Gallinaceous Birds*; whereas in the *Stanley Crane* it is broad and squared. The total length of the *sternum* is  $4\frac{1}{2}$  inches: the greatest depth of the keel  $1\frac{1}{4}$ . The keel does not arise abruptly from the body of the *sternum*, but the latter merges gradually into it.

"The *os furcatum* is very slender and depressed towards the coracoid bones; its figure is triangular, and the *apex* does not reach the keel of the *sternum* by nearly half an inch. The *Cariama* is a bird of feeble powers of flight, very different from the *Crane* in this respect, and exhibiting a corresponding modification of the osseous parts connected with aerial progression.

"The ribs, seven in number on each side, are short and strong; the first two are false: in the *Stanley Crane* I can only find one false rib on each side; while all the rest are long, somewhat slender, and extend nearly 2 inches beyond the posterior margin of the *sternum*: whereas in the *Cariama*, the posterior sternal *apex* extends beyond

the ribs, which here make a very obtuse angle at their junction with the cartilages, or rather bones of sternal attachment.

"The clavicles offer nothing remarkable.

"The bones of the wings are short; the fore arm and *humerus* being of equal length,—4½ inches: the hand consists of the usual bones in *Birds*, and is about 3½ inches in length.

"The *femur*, as in the *Crane*, is short and strong, measuring 3½ inches. The *tibia* is slender, measuring 8½ inches in length; the projecting *crista* before its upper articulating surface is very bold—as in the *Crane*, there is a large internal plate and an external pointed process, with a deep hollow between them, occupying the front of the upper end of the *tibia*. The *fibula* is, as usual, a slender stylet, and 3 inches long. The *tarsus* is 6½ inches long, of a squared form towards its upper extremity, with an anterior and posterior groove very strongly marked, and a slighter groove on each side. The accessory or little metatarsal bone, at the base of the hind toe, is very small, and is situated about an inch from the lower extremity of the *tarsus*. The toes are short and stout, but consist of the usual number of *phalanges*.

"Though the *Cariama*, in its osseous structure, exhibits but little resemblance to the *Birds* of the *Raptorial* order, it approaches that order very remarkably in the structure of the eye, which is surrounded by a firm consolidated osseous ring. This ring departs materially in its formation from what obtains among the *Grallatores* generally, where it is imbricated and slight, and indeed scarcely merits the name of osseous.

"The choroid, the *iris*, and the lens present nothing remarkable. The ciliary processes are 102 in number, and about the 12th of an inch in length. The *marsupium nigrum* is strong, large in proportion to the eye, and much elevated."

In illustration of Mr. Martin's Notes, the mounted skeleton of the *Cariama* was exhibited; as were also preparations of several of the *viscera*.

The following Notes by Mr. Martin, of the anatomy of a specimen of *Buffon's Touraco*, *Corythæx Buffonii*, Vaill., were subsequently read.

"The death of a specimen of *Buffon's Touraco* in the Gardens of the Society, has enabled me to investigate its visceral anatomy, and to compare the details afforded by that species, with those given by Mr. Owen respecting the *Corythæx porphyreolopha*. The individual in question was a female of the *Cor. Buffonii*. In the total length of the head, neck and body, exclusive of the tail-feathers, it measured 8½ inches.

"On opening the *abdomen*, I found the *viscera* thus arranged. Below the edge of the *sternum*, (which is a very short bone, its keel being only 1½ inch long,) appeared the two lobes of the liver, (highly

tuberculated): on the left side was the gizzard; and on the right, the first portion of the *duodenum* with the spleen apparent. On turning back the stomach, there appeared, dorsad, the coil of intestines.

"Beginning with the *œsophagus*, I found it a wide dilatable simple tube, puckered longitudinally within, but these foldings disappeared on dilatation; lying compressed *in situ* its breadth was rather more than  $\frac{1}{4}$  an inch. Without any previous dilatation or crop, it entered the *proventriculus*; its boundary line being a sphincter-like thickening. The whole of the *proventriculus* was covered internally with small thickly set glands, of a flattened figure; and its length from the termination of the *œsophagus* to the gizzard was  $\frac{3}{4}$  of an inch.

"The tongue was tipped with a sharp flat horny point; but I could find no bristles at its apex, as in the *Toucans*, and as was seen by Mr. Owen in the *Corythæix porphyreolopha*. Its base was covered with retroverted *papilla*, which occurred again posterior to the *rima glottidis*. The *pharynx*, or opening into the gullet, was beset with numerous glands, the mouths of which were very visible. The *trachea* was a straight tube; but soon after commencing it gradually contracted, and then gradually dilated for the space of an inch, contracting again, and again dilating as it dipped into the chest. As this peculiarity is not noticed by Mr. Owen in the species he dissected, I conclude that it does not exist in it. The sterno-tracheal muscles consisted of a single pair.

"The liver consisted of two lobes as usual, and beneath the right lay the gall-bladder, of an oblong figure, which I found empty. Its duct, 2 inches in length, entered the *duodenum* at the first angle, and beneath the body of the *pancreas*, accompanied by an hepatic duct which entered with it.

"The *pancreas* was small, and consisted of a lobulated portion lying on the angle of the *duodenum* above mentioned, and giving off a narrow slip along the first portion of the *duodenum* to which it was closely attached. I could trace two small ducts from it entering near the bile-ducts. The distance of this angle from the gizzard was about  $1\frac{1}{2}$  inch. I found the spleen adhering to the gizzard, and between this and the right lobe of the liver. Its figure was oval, its size that of a small nutmeg, its structure soft and evidently disorganized.

"The heart presented nothing remarkable; it was subacute and  $1\frac{1}{4}$  inch long.

"The muscular *parietes* of the gizzard were thin; but this *viscus* was lined by a leathery membrane of a whitish colour: its length was  $1\frac{1}{2}$  inch; its diameter when lying compressed as usual  $1\frac{1}{4}$ . It contained a little undigested vegetable matter.

"The *duodenum*, beginning small from a short pyloric canal, as noticed by Mr. Owen, suddenly dilated to  $\frac{3}{4}$ ths of an inch in diameter; the pyloric canal was corrugated internally, these corrugations verging to a *sphincter*.

"The small intestines were  $11\frac{1}{2}$  inches in length, terminating in a



globular pouch or *cæcum*, not unlike the rudimentary *cæcum* found in some *land Tortoises*. From this pouch to the *anus* the distance was 5 inches. The intestinal canal was full of purulent matter, and its mucous coat was highly inflamed. I found no worms, though I looked carefully for them, opening nearly the whole of the alimentary canal.

"The oviduct and the ureters terminated in the *cloaca* as usual. The ovary was nearly  $\frac{1}{2}$  of an inch long. The kidneys were as usual.

"The eyes approximated closely in structure to those of the *Parrot* tribe. The sclerotic coat had a narrow ring of ossification composed of eleven plates, six of which were disposed in an imbricated manner, the five at the lower and posterior part being only in juxtaposition. Of these plates, however, the three superior alone could be termed fairly osseous. The *cornea* was small in diameter and not very convex. The optic nerve entered the infero-posterior portion of the sclerotic, the *retina* springing from a tubercle under and around the *marsupium*, which was very small. The vitreous humour and *lens* were as usual. The *membrana aquatica*, as it is termed, was very visible. The ciliary processes, the 12th of an inch long, were 96 in number. The *urea* was dark; the *iris* lake colour, and its sphincter fibres distinct; the ciliary ligament broad; the *pigmentum nigrum* dark brown and in large quantity. Many fibrils of the 3rd, 4th, and 5th pairs of nerves pierced the sclerotic."

Mr. Bennett directed the attention of the Meeting to an interesting series of the *Indian Antelope*, *Antelope Cervicapra*, Pall., now at the Society's Gardens. It consists of four individuals: an adult and aged male, brought by Col. Sykes from Bombay, and presented by him to the Society nearly five years ago; a younger, yet adult, male, which was presented, in an immature condition, about two years since; an immature male, lately arrived in the Menagerie, and in about the same state of development as that in which the last-mentioned individual was when it was originally presented; and an emasculated individual of full growth. In the older of these *Antelopes* the rich deep colour of the body generally is so intense as almost to approach to black, and the horns are strong and fully developed; the possession of horns and the depth of colouring, which are peculiar to the male sex, are exhibited in it at their maximum. The second individual approximates nearly to it in the degree in which these secondary sexual characters are developed. In the third, the youngest of the series, there exist the horns characteristic of the male, but these organs are yet of small growth, are only beginning to be annulated at their base, and are commencing their first spiral turn; its colour, as is very generally the case among the young of animals that in adult age are differently coloured in the sexes, is that of the female, which in this instance is a dull fawn with a pale stripe along the side: it has, consequently, in these two striking particulars, full evidence of immaturity. The emasculated individual was probably, at the period when

that accident or operation occurred which prevented the development of its sexual characters, at nearly the same age as the one last adverted to: it has since continued to increase in bulk, and it even exceeds in size, as often happens in castrated animals, the perfect adult male of the same species: but the secondary sexual characters of the male have not been developed in it; it retains the dull fawn colour of immaturity, and its horns have not acquired the strength, the annulation, or the spiral turns which belong to those of the adult and perfect male. One of the horns has been broken off; perhaps the more readily from some weakness in its structure, consequent on its unimportance to an animal so degenerated: the other retains, at a short distance from its normally formed tip, a few rings, but beyond these the surface has become smooth, the substance remains weak and comparatively small, and the direction, instead of being in a succession of spiral turns, is in a single sweep, passing backwards above the base of the ear and then descending along the curve of the neck: it has, though weaker, much of the character of the horns of the African race of *Sheep*. The general appearance of the animal is also sheep-like and tame.

Mr. Bennett proceeded to remark that these animals, although curious and interesting on account of the variations exhibited by them, in accordance with their several conditions, in those acknowledged secondary sexual characters, colour and horns, were yet more interesting when considered with reference to the state of another organ, the use of which has long remained a problem to zoologists, but which, it appeared to him, must be referred to sexual relations; he alluded now to the lacrymal sinus. Referring to its structure as to that of a sac, opening externally by a lengthened slit, but perfectly closed within, he remarked, that that organ could not possibly be in any degree connected with the functions of respiration; there being no aperture through it for the passage of air. Its inner surface is covered by a smooth skin, with a few scattered and very short bristles, and is defended by a dark-coloured and copious secretion of ceruminous matter, which has a slight urinous or sexual odour. He did not feel himself competent, he stated, to explain the precise manner in which this organ is available for sexual purposes; yet he felt convinced that such is its use, from the consideration of its relative development in the several *Indian Antelopes* of the Society's Menagerie.

In the more aged of these individuals, as indeed in the adult *Indian Antelope* generally, the large cutaneous follicle beneath the eye known as the lacrymal sinus, is so prominent as to form a most striking feature in the animal's physiognomy: it never appears as a simple slit, its thickened edges pouting so widely as to be at all times partially everted. When the animal is excited, and it is constantly highly excitable, the eversion of the bag becomes complete, and its thick lips being thrown widely back, the intervening space is actually forced

forwards so as to form a projection instead of a hollow: the animal is, on such occasions, delighted to thrust repeatedly the naked lining of the sac against any substance that is offered to him, which soon becomes loaded with the odour that has been referred to as belonging to the secretion. In the second individual, although it is perfectly mature, the protrusion of the inner surface of the sac is not quite to so great an extent as in the more aged male; and the less thickened edges of the sinus allow of a nearer approximation to its closure in the unexcited state of the animal. The youngest male has the lips of the sinus small and closely applied to each other, so as to hide completely the whole of the internal lining of the sac, and to exhibit, externally, a mere fissure: in it the lips are but slightly moved when the animal is interested. The emasculated individual, notwithstanding its full growth, has its suborbital sinus nearly in the same condition as that of the immature male: it is merely a slight fissure, the edges of which are closely applied to each other; and in it those edges do not appear to be at all moved, the animal being generally careless and inanimate. It would consequently seem that the same cause which induced the retention, by this individual, of its immature colours, and which arrested the perfect growth of its horns, was adequate also for the checking of the development of the suborbital sinuses. Those organs, therefore, would appear to be dependent on sexual perfection; and consequently to be, in some manner yet to be ascertained, subservient to sexual purposes, with the capacity for which they are evidently, in the phases of their development, essentially connected.

Mr. Owen, who had conceived it possible that the secretion of these glands, when rubbed upon projecting bodies, might serve to direct individuals of the same species to each other, remarked that he had endeavoured to test the probability of this supposition by preparing a tabular view of the relations between the habits and habitats of the several species of *Antelopes*, and their suborbital, maxillary, post-auditory, and inguinal glands; in order to be able to compare the presence and degrees of development of these glands with the gregarious and other habits of the *Antelope* tribe. He stated, however, that it was evident from this table, that there is no relation between the gregarious habits of the *Antelopes* which frequent the plains, and the presence of the suborbital and maxillary sinuses; since these, besides being altogether wanting in some of the gregarious species, are present in many of the solitary frequenters of rocky mountainous districts. The supposition, therefore, that the secretion may serve, when left on shrubs or stones, to direct a straggler to the general herd, falls to the ground.

Mr. Owen's Table is as follows:

Suborbital and maxillary sinuses. Suborbital sinuses large.	}	<i>Antilope Sumatrensis</i> . Hilly forests; habits of the Goat. <i>Cervicapra</i> . Open plains of India; gregarious. <i>quadriscopa</i> . Senegal. <i>melampus</i> . Open plains of Caffraria; flocks of six or eight. <i>Porsea</i> . Africa. <i>adenota</i> . Africa. <i>quadricornis</i> . <i>picta</i> . Dense forests of India <i>scoparia</i> . Open plains of S. Africa; sub-gregarious. <i>Tragulus</i> . Stony plains and valleys of S. Africa; in pairs. <i>melanotis</i> . Plains, hides in underwood; in pairs. <i>Dorcas</i> . Borders of the desert; gregarious. <i>Kevela</i> . Stony plains, Senegal; gregarious. <i>subgutturosa</i> . Plains, Central Asia; gregarious. <i>Bennettii</i> . Rocky hills of Deccan; not gregarious. <i>Arabica</i> . Stony hills of Arabia. <i>Sæmmeringii</i> . Hills in Abyssinia; not gregarious. <i>Euchore</i> . Dry plains of S. Africa; gregarious. <i>pygarga</i> . Plains, S. Africa; gregarious. <i>Mhorr</i> . Deserts of Morocco. <i>Dama</i> . <i>ruficollis</i> . Deserts of Nubia; gregarious. <i>Antilope Colus</i> . Vicinity of lakes; gregarious, migratory. <i>gutturosa</i> . Arid deserts, Asia; periodically gregarious.	Inguinal pores.
?	?		?
small.			
Suborbital sinuses.	}	<i>Antilope Saltiana</i> . Mountainous districts, Abyssinia; in pairs. <i>Oreotragus</i> . Mountains of the Cape; like the Chamois. <i>Thar</i> . Hills of Nepal; not gregarious. <i>Gazella</i> . Senegal. ? <i>Antilope Bubalis</i> . Mountains and deserts, Tripoli; gregarious. <i>Caama</i> . Plains of S. Africa; gregarious. <i>lanata</i> . S. Africa. <i>Gnu</i> . Karroos of S. Africa; gregarious. <i>taurina</i> s. <i>Gorgon</i> . S. Africa; gregarious.	No inguinal pores.
Suborbital glands.			?
Maxillary sinuses.	}	<i>Antilope silvicultrix</i> . Thickets and underwood, Africa. <i>mergens</i> . Forests and underwood, S. Africa; in pairs. <i>Grimmia</i> . Guinea. <i>Burchellii</i> . <i>platous</i> . <i>perpusilla</i> . Bushes, S. Africa; in pairs. <i>Maxwellii</i> . <i>pygmaea</i> .	Inguinal pores.

No suborbital, or maxillary sinuses.	Inguinal pores.	<i>Antelope Strepsiceros</i> . Woods and banks of rivers, Caffraria; subgregarious.
		<i>sylvatica</i> . Woods, Caffraria; in pairs.
		<i>scripta</i> .
		<i>Koba</i> . Senegal.
		<i>Kob</i> . Senegal.
		<i>Eleotragus</i> . Reedy banks, Cape; subgre- gious.
		<i>redunca</i> . Goree.
		<i>Cupreolus</i> . Underwood, S. Africa; subgre- gious.
		<i>Lundiana</i> . Underwood, S. Africa; subgre- gious.
(Post-auditory sinuses.)		<i>Antelope Rupicapra</i> . Mountains, Europe; subgre- gious.
No suborbital, or maxillary sinuses.	No inguinal pores.	<i>Antelope Addax</i> . Deserts, N. Africa; in pairs.
		<i>Leucoryx</i> . Acacia groves, N. Africa; gre- gious.
		<i>Oryx</i> . Woods and plains, S. Africa; sub- gregious.
		<i>leucophaea</i> . Open plains, S. Africa; sub- gregious.
		<i>barbata</i> . Open plains, S. Africa; in pairs.
		<i>equina</i> . Plains, S. Africa; in pairs.
		<i>ellipsiprymnus</i> . S. Africa.
		<i>Oreos</i> . Open plains, S. Africa; gregarious.
		<i>Canna</i> . Deserts, Cape; gregarious.
		<i>Goral</i> . Elevated plains, Himalaya; grega- rious.

Mr. Ogilby remarked, with reference to this subject, that he had had opportunities of observing, at the Surrey Zoological Gardens, a female of the *Indian Antelope*, in which, when he first saw her, the lacrymal sinus was in a state of quiescence: but when he observed her again, a month afterwards, and probably in improved condition, that organ was in a state as excitable as it is in the old male of the Society's Gardens.

He added, as a general remark, which, however, he stated was not universal, that in intertropical animals the lacrymal sinus is larger than in more northern species, and in those whose range is limited to mountainous districts.

He also described the lacrymal sinus of a species of *Gazelle*, which he had observed after death: it consisted of a gland furnished with six excretory ducts placed nearly in a circle, and with one central duct: from the orifices of these ducts, when squeezed, there issued out strings of a dense ceruminous matter.

Mr. Bennett stated in conclusion, that since making his observations on the *Indian Antelope*, which had led him to form the opinion he had advanced with respect to the use of the lacrymal sinus, he had

received from Mr. Hodgson of Nepal, a Corresponding Member of the Society, a letter in which, among other subjects, some remarks are made on this organ as it exists in the *Thar Antelope*, and in the *Cervus Aristotelis*: in the former of those animals, Mr. Hodgson's observations prove that during the breeding-season the lacrymal sinus is in a high state of activity. Mr. Hodgson's letter, which is dated Nepal, June 18, 1835, refers also to other glands in some other *Antelopes*, as will be seen by the following extract.

"The *Chiru Antelope* has exceedingly large inguinal sacs, which hang by a long narrow neck from the loins. The longitudinal quasi maxillary gland of the *Cambin Otan* I doubt the existence of, and believe its 'suborbital sinus' to be similar to that of *Thar*.

"The latter differs essentially from that organ in any *Deer* or *Antelope* I have seen; being furnished with a huge gland, filling the whole cavity or depression on the scull, and leaving the cuticular fold void of hollowness: it is filled up, like the bony depression, by the gland; whereas the gland of this sinus, in most *Deer* and *Antelopes*, is a tiny thing, and a dubious one. As to any *Cervine* or *Antilopine* animal breathing through the suborbital sinus, it cannot be, unless they can breathe through bone and skin! If you pass a fine probe down the lacrymal duct, you see the probe through the bottom of the osseous depression holding the cuticular fold called the suborbital sinus. But, however thin the plate of bone at the bottom of the former, it is there, without breach of continuity; and the cuticular portion of the apparatus has a continuous course throughout, leaving no access to the inside of the head. I am watching closely a live specimen of *Cervus Aristotelis*, to discover, if I can, the use of this organ. In a recently killed male of this species, I passed a pipe into the nose, up to the site of the suborbital sinus, and tried, in vain, for half an hour, with the aid of a dozen men's lungs, to inflate the sinus. Not a particle of air would pass; nor could I cause the sinus to unfold itself, as the live animal unfolds it, by means of a set of muscles disposed crosswise round the rim of it. In dissecting the sinus, I found only a feeble trace of a gland; so also, in the *Muntjac*.

"But in the *Thar*, the gland is conspicuous, being a huge lump of flesh, bigger than, and like in shape to, the yolk of an egg. The live *Thar*, too, in the spring especially, pours out a continuous stream of thin viscid matter from the sinus; not so in any *Deer*. The *Thar's* gland seems to me connected with the generative organs; and I take its profuse secretion to be a means of relieving the animal (when it has no mate particularly) from the extraordinary excitement to which it is liable in the courting-season. I have witnessed that excitement, and have been amazed at its fearful extent, topical and general, for six weeks and more.

"The *Chiru's* labial sacs, or intermaxillary pouches, are, most clearly, accessory nostrils, designed to assist breathing at speed.

They spread with the dilatation of the true nostril, and contract with its contraction. This species has but five molar teeth on each side of either jaw,"—B. H. II.

April 12, 1836.

William Yarrell, Esq., in the Chair.

Mr. Bennett directed the attention of the Meeting to a living specimen of the *brush-tailed Kangaroo*, *Macropus penicillatus*, Gray, which had recently been added to the Menagerie; having been presented to the Society by Captain Deloitte, Corr. Memb. Z. S. He remarked particularly on the peculiarity of its actions, as compared with those of the typical *Kangaroos*; and especially on the ease with which it vaults from the ground to any slight ledge, on which it remains perched, as it were, with its tail extended behind it: the tail, in fact, appearing to be in no respect aiding in the progression of the animal.

Referring to some observations which he had made on the exhibition of a skin of the same species, at the Meeting of the Society on January 13, 1835, (Proceedings, part iii. p. 1,) he stated it to be his intention to reduce into order his various remarks on the subject, and to accompany them by a figure of the animal taken from the living specimen.

Mr. Owen read the following notes of the morbid appearances observed in the dissection of the specimen of the *Chimpanzee*, *Simia Troglodytes*. Linn., which lately died at the Gardens; and respecting the habits and faculties of which some observations by Mr. Broderip were read at the Meeting of the Society on October 27, 1835. (Proceedings, part iii. p. 160.)

"Adhesions of the abdominal *viscera* to the *parietes* of the cavity existed in many parts, but more especially of the ascending *colon* and *cæcum* on the right side. On separating these adhesions a purulent cavity was exposed, with which the *ileum*, near its termination, communicated by an ulcerated aperture about half an inch in diameter. An abscess also existed between the lower end of the *cæcum* and the *peritoneum*, and the whole of the *fundus* of the *cæcum* was destroyed by ulceration, together with part of the vermiform process; the remainder of which was much contracted and shrivelled, and was found adhering to the sound part of the *cæcum*. The efficiency of the adhesive process in repairing, or at least preventing, the immediate evil consequences of a solution of continuity in the intestinal *parietes*, was remarkably exemplified in this instance; for notwithstanding the extent to which this had taken place, not a particle of the alimentary matters had escaped into the general cavity of the *abdomen*, nor was the mischief suspected until the adhesions were separated.

"On laying open the *ileum* it appeared that the original seat of the ulcer had been a cluster of the aggregated intestinal glands:

NO. XI.—PROCEEDINGS OF THE ZOOLOGICAL SOCIETY.



similar patches in the immediate neighbourhood were in a state of ulceration; and others were enlarged, or more than usually conspicuous, as they were situated farther from the seat of the disease. In the commencement of the *colon*, the solitary glands presented a state of enlargement and ulceration, and here and there an inordinate vascularity; but in the general track of the intestinal canal traces of recent or active inflammation were very few. The condition of the mucous membrane of the intestines closely resembled that which is so generally observed in phthisical subjects; here, however, the strumous matter was not developed in the lungs, but was confined to the mesenteric glands and spleen. All the mesenteric glands were more or less enlarged by a deposition of caseous matter: two, which are usually found adhering to the termination of the *ileum*, were even in a state of suppuration and ulceration, so that the *parietes* of the gut may have been attacked by the ulcerative process on both sides,—from without by that commencing in the mesenteric glands,—from within by that of the *glandule aggregatæ*: it was most probably, however, progressive from the latter point.

"The spleen was greatly enlarged, measuring 5 inches long and 4 broad, with numerous small scattered tubercles, none exceeding half an inch in diameter. Its substance was firm, but so disorganized as to enable it to fulfil in a very slight degree the functions of a reservoir of venous or portal blood.

"The liver was enlarged about one third beyond its usual size, and was of a pale colour; but upon a close inspection it presented no other morbid appearance than a congested state of the portal veins: a condition frequently associated with strumous *viscera*, and which was very well marked in this case, and perhaps dependent on the diseased state of the spleen. The gall-bladder contained thick but healthy-coloured bile.

"The stomach seemed free from disease; but had a large perforation, the margins of which showed that it had resulted from the *post-mortem* action of the gastric secretion.

"The *pancreas* was healthy.

"In the chest there were no adhesions. The heart was healthy. The lungs were somewhat firmer than usual, and the air-passages contained an unusual quantity of fluid secretion, in some parts stained with blood, but none of the air-cells had been obliterated by either inflammatory action or strumous deposition: there had been recent subacute inflammation of the mucous lining of the air-passages, but nothing more.

"No *Entozoa* were met with in the dissection; although the alimentary canal was carefully searched for them.

"The brain and its membranes were healthy.

"With respect to the organization of the *Chimpanzee*, so far as the dissection was carried, the parts corresponded with the descriptions given by Tyson in his 'Anatomy of a Pygmy'; and by Dr. Traill in the 'Wernerian Transactions,' vol. iii.

"The *tunica vaginalis testis*, which communicates with the *ab-*

do not in the *Simia Satyrus*, was here a completely closed or shut sac, as in the human subject."

The following "Descriptions of some Species of Shells apparently not hitherto recorded: by W. J. Broderip, Esq., V.P.Z.S., F.R.S., &c." were read. The reading of the communication was accompanied by the exhibition of specimens of the several species referred to in it.

*SPONDYLUS ALBIDUS.* *Spond. testâ albidâ, lineis elevatis frequentissimis exasperatis, a cardine radiantibus, horridâ: long. 1 $\frac{3}{4}$ , lat. 1 $\frac{1}{2}$  poll.*

*Hab.?*

This delicate shell is rough like a file, and has indeed somewhat the aspect of a *Lima*.

*VOLUTA BECKII.* *Vol. testâ ovato-fusiformi, fulvâ lineis subangulatis spadiceis inscriptâ, transversim striatâ, striis minutis subundulatis; anfractibus tuberculato-subplicatis, ultimo longissimo; spirâ mediocri; columellâ triplicatâ; aperturâ ovato-elongatâ: long. 8 $\frac{3}{4}$ , lat. 4 poll.*

*Hab.?*

Mus. Saul, Brod.

The body whorl of this fine species, which I have named after that distinguished conchologist Dr. Beck, is upwards of 6 inches in length.

I have long had a bleached specimen in my collection, but the description above given is taken from one with more colour and in better condition, though not good, in the cabinet of Miss Saul. My specimen is somewhat shorter. There is a very large individual lately added to the British Museum.

*VOLUTA CONCINNA.* *Vol. testâ mitriformi, transversim subtilissimè striatâ, striis elevatis, fulvâ lineis longitudinalibus spadiceis, subirregularibus, frequentissimis inscriptâ; anfractibus plicatis, plicis subtubercularibus, anfractu basali elongato, fasciis duabus distantibus pallidioribus obscuris cincto; spirâ mediocri, valdè plicatâ; columellâ 4-plicatâ; aperturâ angustiore: long. 3 $\frac{3}{4}$ , lat. 1 $\frac{1}{2}$  poll.*

*Hab.?*

Mus. Brod.

This is an elegant shell, approaching a little in some of its characters to *Vol. Lyriformis*, but differing widely from it in others. Of the total length of *Vol. concinna* two inches and a half are occupied by the body whorl, and it is only in the transversely striated plications of the spire, which are however more distant than those of the spire of *Vol. Lyriformis*, that the resemblance occurs, for the spire of *Vol. concinna* is very short in proportion to its body whorl, while the opposite character is strongly developed in *Vol. Lyriformis*. In this respect it comes nearer to *Vol. gracilis*, as well as in the form

and colour of the aperture and the plants on the pillar. The aperture of *Iol. concinna* is fulvous, and the inner lip, where the mantle has extended, is of the same colour, with a few traces of the longitudinal lineations not yet obliterated.

My specimen is the only one I have seen.

*CONUS ADAMSONI.* *Con. testâ solidâ, subcylindraceâ, glabrâ, albâ rosco pallido spadiceoque tessellatâ; anfractu basali superm. et ad basin sulcatâ, sulcis elevatis latis (interstitiis superiorum sub punctatis), fasciis tribus subaquidistantibus spadiceo-maculatis ornato; spirâ brevî, anfractibus subconcavis, transversim striatis*  
*Hab. ?.*

Mus. Adamson.

This species is nearly as solid and ponderous as *Con. Stercus Alucarum*, which it resembles somewhat in shape, though *Con. Adamsoni* is longer in proportion. It has also points which remind the observer of *Con. bullatus*; but is more nearly allied to *Con. discrepans*, Couch. Illustr. f. 28.

*PURPURA GRAVIERI.* *Purp. testâ sordidi albâ, muricata, striis validis, elevatis, imbricato-squamulosis rugosa; anfractibus longitudinaliter subplicatis, angulosis, angulis luminatis, serratis, re-troversis; anfractu basali strid validiore, submediali, elevatâ cincto: long. 4½, lat. 1½ poll.*

*Hab. in mari Mediterraneo.*

Mus. Norris, Brod.

This shell was brought up on the fluke of the anchor of H.M.S. Mastiff, surveying-vessel, under the command of Lieut. Graves (who has already enriched this department of natural history by his activity in collecting, whenever the pressure of his professional duties would allow him to do so,) from a muddy bottom, and a depth of ten fathoms, off Napoli di Romania. The shell varies much, and other specimens have not the carinations, &c. nearly so much developed.

There is a figure of this species in Mr. Sowerby's 'Conchological Illustrations,' under the name of *Murex cariniferus*.

*BULINUS CRICHTONI.* *Bul. testâ fusiformi, longitudinaliter costatâ et corrugatâ, costis rugisque validis, subalbida maculis spadiceis notatâ; labio rosaceo-violaceo, labro pallidiore, expanso, subreflexo: long. 3 (circiter), lat. 1½ poll.*

*Hab. ad Ambo juxta Huanuco Peruviam.*

Mus. Brod.

This curious shell, which at first sight reminds the observer of *Bulinus Labeo*, Brod., (Zool. Journ., vol. iv. p. 222,) brought home by Lieut. Maw, R.N., and presented by him to the Zoological Society of London, from whose Museum it has been stolen\*, differs strongly from it, as will be seen by a reference to the figure in the 'Zoolo-

\* This certainly was, and I believe (wherever it may be) is, the only specimen in Europe. It was in remarkably fine condition.

gical Journal' which is very accurate, excepting that the longitudinal lines in the engraving are rather too strongly expressed. The *apex* of the shell under description, the only specimen I ever saw, is broken, and its actual length is 2 inches and  $\frac{7}{8}$ . It will be observed that the specimen is notched at the base, but I suspect that this arises from accidental distortion.

The shell is named after my friend Sir Alexander Crichton, to whose liberality I am indebted for this and the following species.

**BULINUS INILATUS.** *Bul. testâ fragili, subalbida vel flavâ, fusco vel castaneo maculata, anfractu basali castaneo fasciata, fasciis numerosis. long.  $\tau_6$ , lat.  $\tau_6$  poll.*

*Hab. juxta Ambo Peruvia.*

This pretty shell somewhat approaches *Bul. guttatus*, brought home by Mr. Cumming. The species varies very much.

**BULINUS PUSIO.** *Bul. testâ valdè ventricosa, ovato-globosa, cornea, diaphana, longitudinaliter striata; labri margine albo; umbilico mediocri: long.  $\tau_7$ , lat.  $\tau_6$  poll.*

*Hab. in maris Mediterranei insulis Græciæ (Syra).*

This species was found in the island of Syra by Lieut. Graves, during his late survey in H.M.S. Mastiff. There were but two specimens; in one the *umbilicus* is very visible: in the other it is nearly closed.

April 26, 1836.

William Yarrell, Esq., in the Chair.

A Note was read, addressed to the Secretary by J. B. Harvey, Esq., Corr. Memb. Z.S., and dated Teignmouth, April 24, 1836. It referred to a series of specimens of *Rostellaria Pes. Pelicani*, Lam., presented by the writer to the Society, and which he regards as interesting on account of the evidence afforded by them of the curious fact, that in the shells of this species the outer lip is most thickened at a time antecedent to the full development of the shell; absorption of the incrimated part of the lip taking place as the animal advances in age. "This series," Mr. Harvey remarks, "clearly shows that the shell, when not more than one half or three quarters grown, is much thicker than when all the processes are perfected; and that, when each process has a groove or channel in it, the shell is quite thin, and has arrived at its full period of growth."

The shells referred to in Mr. Harvey's letter were exhibited.

Characters were read of the *Vespertilionidae* observed in the central region of Nepál; being a communication transmitted to the Society by B. H. Hodgson, Esq., Corr. Memb. Z.S. They have already been published in the 'Journal of the Asiatic Society of Calcutta'.

The following are the species characterized:

*Rhinolophus armiger*, Hodgson.

*Rhin. tragatus*, Ej.

*Pteropus leucocephalus*, Ej.

*Pter. pygæus*, Ej.

*Vespertilio formosa*, Ej.

*Vesp. fuliginosa*, Ej.

*Vesp. labiata*, Ej.

Mr. Hodgson's characters of these species are accompanied by remarks on the habits of the several genera of *Bats* which are represented by them in the district in which they occur.

A second communication by Mr. Hodgson was read, which has also been published in the 'Journal of the Asiatic Society of Calcutta'. It was entitled "Specific Name and Character of a New Species of *Cervus*, discovered by Mr. Hodgson in 1825, and indicated in his Catalogue by the local name of *Báhráya*."

The animal to which this paper refers is regarded by Mr. Hodgson as constituting an important link in the chain of connexion between the *Deer* of the *Rusan* and of the *Elaphine* groups; possessing in the numerous snags into which the summit of its horns are divided one of the principal characteristics of the latter group; but agreeing

with the former in the absence of any median process on the stem of the horn, and in the singleness of the basal antler. In stature and aspect the species is intermediate between *Cervus Hippelaphus*, Cuv., and *Cerv. Elaphus*, Linn. Its general resemblance to the latter is indicated in the trivial name assigned to it by Mr. Hodgson, that of *Cerv. Elaphoides*.

It is referred to in his 'Catalogue of the *Mammalia* of Nepál' (Proceedings, part ii. p. 99.) under the name of *Cerv. Bahraiya*, Hodgs.

Specimens were exhibited of numerous species of British *Fishes*, forming part of the collection of Mr. Yarrell. They consisted of dried preparations of rather more than one half of the skin of each individual: a mode of preservation peculiarly adapted, as Mr. Yarrell remarked, for travellers over land; specimens so prepared occupying but little space, and being consequently as portable as dried plants. An incision is made in the first instance round one side of the fish, at a short distance from the dorsal and anal fins, and the whole of the *viscera* and flesh are removed, so as to leave only the skin of the other side with the vertical fins attached to it, and with rather more than one half of the head: the loose edge of skin left from the side in which the incision has been made, is then fastened by means of pins to a piece of board, so as to display the entire side of the fish which it is intended to preserve, and it is then hung up to dry in an airy but shady situation. The more rapidly the drying is completed, the more effectually will the colours be preserved. As soon as the skin is dried it is varnished; and the loose edge of the skin on that side from whence the operation of removing the flesh has been effected is trimmed off with a pair of scissors, as being no longer useful. The preparation is then completed, and consists of the entire skin of one side of the fish, of the vertical fins, and of rather more than one half of the head, the latter being important for the preservation of the *omer*, so as to show the absence or presence of teeth on that bone, and their form. All the essential characters of the fish are consequently preserved, if care be taken that the skin be so attached to the board on which it is dried, as to retain its original dimensions of length and depth: the due thickness of the fish may be secured in the preparation, if it be considered desirable, by inserting beneath the skin, when extending it on the board, a sufficient quantity of prepared horse-hair.

After explaining the mode which he had adopted in the preparation of the specimens exhibited, Mr. Yarrell made various remarks on those which he regarded as the most interesting among them; and particularly on a series of *Trout* and *Charr* from different localities, and varying in colour according to situation, to season, and also, in some instances, to food.

He then directed the attention of the Meeting to the specimens of the British species of *Rays* which formed part of the collection, and pointed out particularly the difference, as regards surface, which obtains in the sexes of many of these fishes; the skin of the female

being, in every instance, comparatively smooth. He added also, by reference to these specimens, and to specimens of the jaws exhibited for that purpose, an explanation of the differences which exist, in adult individuals, in the teeth of the sexes respectively, those of the male becoming exceedingly lengthened and pointed, while in the female they retain very nearly their original flattened surface: the form of the teeth, equally with the armature of the surface, constituting in these fishes a secondary sexual character, although both the one and the other have repeatedly, but erroneously, been considered as adapted for the establishing of specific distinctions.

May 10, 1836.

The Rev. J. Barlow in the Chair.

The following Note by the Rev. H. Dugmore was read.

"Lieut. Col. Mason, of Neeton Hall (four miles from Swaffham), has had a *Sea Eagle*, *Haliaetus albicilla*, Sav., in confinement for the last sixteen years. About a month since, it dropped an egg, which is now in my collection. The egg is perfectly white, and not quite so large as that of a *Goose*: the shell is rather harder."

A letter was read from Capt. Green of Buckden, Huntingdonshire, descriptive of a very fine specimen of the barn-door *Hen* in his possession, which has assumed the *Cock* plumage: the change took place about three years ago. The bird has since been presented to the Society by the writer.

Mr. Owen read the following Notes on the Anatomy of the *Wombat*, *Phascolomys Wombat*, Pér.

"The anatomy of the *Wombat* having already engaged the attention of Cuvier ('Leçons d'Anat. Comparée, *passim*) and Home (Phil. Trans. vol. xcvi. 1808, p. 304,) but little remains to be added on that subject.

"The individual lately dissected at the Museum of the Zoological Society had lived at the Gardens upwards of five years. The one which was dissected by Sir Everard Home in 1808 was brought from one of the islands in Bass's Straits, and lived as a domestic pet in the house of Mr. Clift for two years. This animal measured two feet two inches in length, and weighed about 20lbs: it was a male. The Society's specimen was a female, and weighed, when in full health in October 1833, 59½lbs.

"On removing the integuments of the *abdomen*, much subcutaneous fat, of the lard kind, was observed.

"The muscles of the *abdomen* presented the same arrangement as in other *Marsupiala*; the internal pillars of the external abdominal rings being formed by the marsupial bones, round which a broad cremaster, emerging from each ring, wound inwards and upwards to terminate by spreading over the mammary gland.

"The digestive organs in the abdominal cavity presented a development corresponding generally to that which characterizes the same parts in the *phyliphagous Rodents*.

"The stomach precisely corresponded with the description and figure given by Home; but the occurrence of cardiac glands in the *Dormouse* and *Beaver* renders a similar structure in this *Marsupial*, in which the *Rodent* type of dentition exists, less extraordinary than

NO. XLI.—PROCEEDINGS OF THE ZOOLOGICAL SOCIETY.



it might otherwise appear. The *duodenum* commenced by a large pyriform dilatation, similar to that in the *Capybara* and *Spotted Para*; beyond this part it presented a diameter of an inch; the small intestines then gradually widened to a diameter of  $1\frac{1}{2}$  inch, and as gradually diminished again to the diameter of an inch. their entire length was 11 feet 3 inches.

"The *ileum* entered obliquely the wide sacculated *colon*, the bulging commencement of which represented a short and wide *cæcum*; and from the angle between this part and the *ileum*, a cylindrical vermiform process 2 inches long, and 3 lines wide, was continued.

"The *colon* continued to be puckered up by two wide longitudinal bands into large *sacculi*, which could be traced becoming less and less distinct along an extent of the gut measuring five feet 2 inches. Cuvier observes that the large intestines were hardly more voluminous than the small\*; in our specimen the *colon* measured  $2\frac{1}{2}$  inches in diameter, being more than double that of the *ileum*. But a more important difference was observed in the presence of a second *cæcum* at the distance from the first above mentioned. This consisted of a pyramidal pouch projecting 3 inches from the side of the gut, and communicating freely with the same at its base: its *parietes* were thinner than those of the rest of the large intestine; it was situated below the pyloric end of the stomach, had only a partial investment of *peritoneum*, and adhered by a cellular medium to the *duodenum* and *pancreas*. Below this second *cæcum*, or lateral dilatation, the *colon* formed a large *sacculus*, and was then disposed in a series of smaller *sacculi*, which at length disappeared at a distance of 6 feet from the second *cæcum*; the rest of the large intestine, 3 feet in length, was of simple structure, and of smaller diameter, viz.  $1\frac{1}{4}$  inches.

"The internal surface of the small intestines presented some slight transverse corrugations; that of the *colon* was smooth, except below the second *cæcum*, where the lining membrane was corrugated irregularly; and a small patch of glands was here observable.

"The *rectum* terminated, as in other *Marsupials*, immediately behind the urethro-sexual aperture, and within a common outlet, both the excretory orifices being embraced by a common cutaneous sphincter.

"The liver was more completely separated into lobes than in the specimen dissected by Cuvier. Home is silent as to the structure of the liver; his observations respecting the digestive organs are limited to the peculiarities of the stomach. In our specimen the liver was divided by an extensive longitudinal fissure into two lobes, the right of which was again deeply subdivided into two, the gall-bladder being lodged in this second fissure: the gall-bladder was of an oval form,  $2\frac{1}{4}$  inches in length.

"The *pancreas* and spleen were both well developed, and had each

\* "Dans le Phascolome, les gros intestins ne sont guère plus volumineux que les petits." *Leçons d'Anat. Comp.*, nouv. éd.

the descending process which characterizes these parts in the *Marsupial* animals.

"The parotid glands were very thin, situated upon, and partly on the inner side of, the posterior portion of the lower jaw; they measured each  $1\frac{1}{2}$  inch in length, and  $\frac{1}{2}$  inch in breadth; the duct passed directly upwards and outwards till it reached the orifice of the *sternocleido-mastoideus*; here it was buried in the cellular substance anterior to that muscle, then turned over the *ramus* of the jaw, and continued its course over the *masseter*, where it was slightly tortuous; it entered the mouth just anterior to the edge of the *buccinator*. The submaxillary glands were each about the size of a walnut; their ducts terminated, as usual, on each side of the *frænum linguae*.

"The heart of the *Wombat* presented the usual peculiarities occurring in this part of the Marsupial organization; viz. 1st, the two appendages of the right auricle, one passing in front and the other behind the ascending *aorta*; 2ndly, the absence of the *annulus* and *fossa, ovalis*; and 3rdly, the absence of the terminal orifice of the coronary vein which empties itself into the *cava superior sinistra* just before the wide termination of the latter vein in the auricle by the side of the *cava inferior*. The right auriculo-ventricular opening is widely open, and is guarded by an irregular narrow membranous valve, the outer portion of which is attached to the tendons of three *carneæ columnæ*; two of which are of a large size as compared with the third, and arise, as in the *Kangaroo*, from the *septum* near the angle where this is joined to the *parietes* of the ventricle. The muscular walls are continued obliquely upwards in a conical form to the origin of the pulmonary artery, somewhat resembling a *bulbus arteriosus*. This peculiarity is still more marked in the *Kangaroo*. The right ventricle descends nearer to the *apex* of the heart in the *Wombat* than in the *Kangaroo*, and the form of the heart is longer and narrower. The left auricle is smaller and more muscular than the right; the valve between it and the ventricle is, as usual, broader and stronger, and its free margin is attached to the tendons of two thick *columnæ carneæ*, having the usual origins distinct from the *septum*, leaving that part of the inner surface of the ventricle smooth for the passage of the blood to the *aorta*. The pulmonary veins terminate by two trunks in the left auricle.

"The lungs consisted of one lobe on the left side, and one on the right, with the *lobulus medius*; which was a small strip extended between the heart and diaphragm.

"The thyroid glands were elongated bodies of a dark colour, reaching from the thyroid cartilage to the seventh tracheal ring on each side.

"The kidneys were each  $2\frac{1}{2}$  inches long, and 2 inches broad, and of a somewhat compressed oval figure; the *tubuli* terminated on a single obtuse *mammilla*.

"The specimen dissected by Cuvier being, like that examined by Home, a male, the female organs of the *Wombat* are only known by

the description appended to the paper of the latter author, which relates to an impregnated individual. I found no part of the structure which supports the view taken by Sir Everard Home relative to the passage of the fecundating fluid to the *uterus*; the only natural communication between those cavities and the urethro-sexual canal being by the two lateral vaginal canals. The female organs consist, as in the *Opossum*, of two ovaries, two Fallopian tubes, two *uteri*, each opening by a separate *os tincæ* into a distinct *vagina*; the *vagina* having no intercommunication, but terminating in the common passage of Tyson, or urethro-sexual canal.

"The urethro-sexual canal is  $1\frac{1}{2}$  inch in length; its inner surface is disposed in thick folds. The two anterior ones commencing united together form a semilunar fold above the urethral aperture; these folds are deeply intersected with oblique *rugæ*, the margins of which are villous, the *villi* becoming longer and finer as they approach the orifices of the true *vagina*. These commence  $\frac{1}{4}$  an inch above the urethral orifice: their *parietes* are very thick for the extent of one inch, and the lining membrane of this part is disposed in minute longitudinal *rugæ*; it is then disposed in larger, coarser, and villous *rugæ*, similar to those of the first *vagina*, beneath which membrane several small vesicles were developed. Each of the true *vagina* having ascended with an outward curve for 2 inches, receives the *os tincæ* of its respective side, which is very projecting, and divided by deep fissures into numerous processes, resembling a short tassel. The *vagina* then descend to the upper part of the urethro-sexual canal, forming each a deep and large *cul de sac*, the inner surface of which is characterized by irregular villous *rugæ*, and the whole is highly vascular.' The *culs de sac* are separate as in the *Opossum*, and do not communicate as in the *Kangaroo*.

"The *uteri* are each 2 inches long, and  $\frac{3}{4}$  of an inch in diameter, somewhat flattened, pyriform, and giving off the oviducts from the inner or mesial part of their *fundus*. For the extent of an inch, the lining membrane presents a series of small but well-defined longitudinal *rugæ*, beyond which it assumes a fine texture, like velvet. The peritoneal covering of the *uterus* is reflected from it upon the ovarian ligament, the oviduct and the numerous vessels passing to the *uterus* on the outer side of this ligament, the duplicature or broad ligament containing which parts is  $1\frac{1}{2}$  inch in breadth, and attached by its outer margin to the lumbar region of the *abdomen* as high as the kidney: just below this gland it is reflected upon the ovary, forming a large capsule for that part, and for the expanded extremity of the Fallopian tube, which presents an extraordinary development of fringe-like processes.

"The ovary presents the most distinct racemose structure which I have ever observed in the class *Mammalia*, consisting of about thirty ovisacs, of which the largest is half an inch, the smallest half a line in diameter; the whole ovary being of an oblong irregular figure  $1\frac{1}{4}$  inch by 1 inch in dimensions. The mouth of the ovarian

capsule is about 1 inch in width, the length of the Fallopian tube 3 inches."

Some Notes by Mr. George Bennett, Corr. Memb. Z.S., were read. They were transmitted from Sidney, New South Wales, in a Letter addressed to the Secretary, and bearing date October 25, 1835. They related to the habits of the *Spermæti Whale*, and of the large species of *Grampus* known by the name of the *Killer*.

May 24, 1836.

William Ogilby, Esq., in the Chair.

A letter addressed to the Secretary by J. B. Harvey, Esq., Corr. Memb. Z.S., and dated Teignmouth, May 18, 1836, was read. It referred to a collection of various marine productions of the south coast of Devonshire, which accompanied it, and which were presented to the Society by the writer. These were exhibited.

Among them was a specimen of *Cypris Aper*, La Cép., captured in Mr. Harvey's neighbourhood: and with the view of illustrating the colours of this species, he forwarded with it a painting made from the fish while yet recent. This also was exhibited.

With the collection were several specimens of a *Tubularia*, nearly related to *Tub. indivisa*, of which Mr. Harvey furnished a detailed description, accompanied by numerous figures. The description was read, and the figures were exhibited.

Mr. Harvey first observed the *Tubularia* in question at the steam bridge on the river Dart, where it grows in clusters between the links of the chain over which this floating bridge is propelled. The specimens obtained by him in this locality were necessarily injured in the hurried manner of taking them off during the rapid motion of the bridge; but as they were immediately placed in sea-water most of them have survived the force used in separating them, and he has thus been enabled to observe them for a week or ten days, during which he has carefully studied their form and structure. His drawings are intended to illustrate many of the different positions of the polype in various conditions as to growth, expansion, &c.

"This animal," Mr. Harvey remarks, "is evidently a *Tubularia*. It is something like *Tub. indivisa* figured by Ellis, Plate XVI. no. 2. fig. c., but differs in several particulars. The tube of Ellis's *Tubularia* is jointed; the head has a lateral groove or opening; and the central projection (which is an elongation of the membrane covering the body) is much larger and higher, and is not surmounted by a row of slight long feelers. This *Tubularia* (for which, as a distinction, I submit the term *Tub. gracilis*.) has the tube hollow throughout and single; the body has no lateral groove; the central process has a row of fine long feelers near its termination, and placed round the orifice: their office is to direct the food to the mouth. On the circumference of the cup is a row of very long flexible feelers, having much freedom of motion, and between each two of them is a smaller red feeler; from the circumference to the origin of the central process are two or three confused rows of alternate white and red short papillæ, giving the animal much the appearance of a flower.

"The powers of contraction and dilatation very much resemble those of the *Caryophyllia*, which I have still alive, and which I have kept for two years. Upon the slightest touch all the feelers are instantly contracted; but the shaking of the water does not at all incommode them. I kept several clusters in the same bowl with my *Caryophyllia*; but I found that, every time they came near it, (either by being touched or by shaking the vessel) they were devoured: I therefore, now keep them by themselves, but I fear that I shall not be successful in preserving them, as the river tide cannot be initiated in confinement.

"The locality of this polype is very confined. The Dart floating bridge is propelled upon two chains, about 6 feet distant from one another, and stretching across the river. On the western chain not a cluster could be seen, but on the eastern one there were upwards of a hundred groups of them, in spite of the immense friction to which they were exposed. They are only found within 100 feet of the northern shore at low water. I have since observed the same animals growing on the links over which the floating bridge at Devonport runs, and there they do not occupy a space exceeding 150 feet.

"The most singular circumstance attending the growth of this animal, and which I discovered entirely by accident, remains to be mentioned. After I had kept the clusters in a large bowl for two days, I observed the animals to droop and look unhealthy. On the third day the heads were all thrown off, and lying on the bottom of the vessel; all the pink colouring matter was deposited in the form of a cloud, and when it had stood quietly for two days, it became a very fine powder. Thinking that the tubes were dead I was going to throw them away, but I happened to be under the necessity of quitting home for two days, and on my return I found a thin transparent film being protruded from the top of every tube: I then changed the water every day, and in three days time every tube had a small body reproduced upon it. The only difference that I can discover in the structure of the young from the old heads, consists in the new ones wanting the small red *papillæ*, and in the absence of all colour in the animal."

The skin was exhibited of a species of *Cynictis*, Og., which had recently been presented to the Society by Captain P. L. Strachan, by whom it was obtained at Sierra Leone. The exhibition was accompanied by a description of the animal by Mr. Martin, which was read.

Mr. Martin regards the animal as especially interesting on account of its presenting the second instance of the new form among the *Viverridæ* which was described by Mr. Ogilby at the Meeting of the Society on April 9, 1833, under the generic appellation of *Cynictis*, and of which a detailed description and figure has since been published in the Transactions, vol. i. p. 29. It agrees with that genus, which is intermediate between *Herpestes* and *Ryzana*, in its general form; in the number of the toes with which its feet are fur-

nished; and in the number and form of its teeth, as far as they are preserved in the specimen exhibited, which, however, is that of a young individual. The points of the teeth are consequently in it unworn and acute: while in the specimen of *Cyn. Steedmanni* described by Mr. Ogilby, which was evidently an aged individual, the teeth were much worn down. The only other differences which exist between the teeth of the new species and those of *Cyn. Steedmanni* consist in the presence, in the outermost incisor in the upper jaw of the former, of a minute but decided internal tubercle, which is not found in the corresponding tooth of *Cyn. Steedmanni*; and in the inner lobe of the carnassier of the upper jaw being acute and conical, instead of blunt: the teeth behind this, in both jaws, are wanting in the specimen of the new species. The feet of the new species differ from those of *Cyn. Steedmanni* by their comparatively shorter claws; and by having a naked line extending along the under surface of the *tarsus* from the pad to the heel, the whole of the under surface of the *tarsus* being covered in *Cyn. Steedmanni* with hair.

The new species may be thus characterized:

*CYNICTIS MELANURUS.* *Cyn. saturatè rufus nigro punctulatus, ad latera pallidior; guld sordidè flavescenti-brunneus; artubus internè abdomineque sordidè flavescanti-rufis; caudè apicem versus latè nigrâ, ad apicem floccosâ.*

Long. corporis cum capite, 12 unc.; caudæ, pilis inclusis, 11; capitæ, 2 unc. 1 lin.

In addition to the distinctive characters which have been noticed above, it may be remarked that *Cyn. melanurus* differs from *Cyn. Steedmanni* in the greater smoothness, shortness, and glossiness of the fur; in the less bushy character of the tail; in the dark tint of the head, back, and limbs; in the dusky colour of the throat; and in the black tip of the tail, the corresponding portion of this organ in *Cyn. Steedmanni* being white.

Mr. Ogilby remarked, that the animal described by Mr. Martin might probably be identical with the one noticed by Bosman under the name of *Kokeboe*; but added, that the notice given of it by that traveller was not sufficiently precise to admit of its being determined with certainty.

A specimen was exhibited of the *Chironectes Yapoek*, Desm., on which Mr. Ogilby remarked as follows.

"I am indebted to Mr. Natterer for the opportunity of examining this rare and curious animal, of which he brought various specimens from Brazil. That now exhibited is a male, and possesses the same anomaly in the generative organs which characterizes the rest of the *Marsupials*. I have not seen the female, but Mr. Natterer informs me that the abdominal pouch is complete. The species is found in all the smaller streams of Brazil, and appears to extend from the southern confines of that empire, to the shores of the Gulf of Honduras; Buffon's specimen came from Cayenne, and a skin was recently obtained by Mr. W. Brown Scott, labelled '*Demerara Otter*.'

Both this and Mr. Natterer's specimen agree with the figure and description of Buffon, except that they are of a larger size, and instead of a grey mark over each eye, have a complete band of that colour extending entirely across the forehead. In Mr. Natterer's specimen the terminal half-inch of the tail only is white; in Mr. Scott's on the contrary, the last 4 inches are of this colour: the tail is exactly of the same length as the body; it measured 10 inches in the former specimen and 12 in the latter, but Mr. Natterer informs me that he has other specimens which measure 14 or 15 inches in length.

"The teeth of this animal are altogether different from those of the *Opossums* (*Didelphis*); and I am at a loss to reconcile my own observations with those of M. F. Cuvier upon this subject, as given in 'Les Dents des Mammifères' p. 73, unless by supposing that there must have been some mistake about the skull referred by M. Cuvier to the *Yapock*. For my own part, I could not be deceived in this matter, as the skull which I examined had never been extracted from the specimen. The incisors and canines are of the same form and number as in the true *Opossums*, the two middle incisors above being rather longer than the lateral, those below broader and a little separate. The molars are five on each side, two false and three real, both in the upper and under jaws. The first false molar is rather small and in contact with the canine, both above and below: the second is half as large again, and both are of a triangular form, with apparently two roots. The three real molars are of the normal form of these teeth among the *Opossums*. The first of the upper jaw is longer than it is broad, and has four sharp elevated tubercles with a low heel projecting backwards; the second resembles it in general form, but is larger and broader; the third is small and resembles the tuberculous molars of the true *Carnivora*. In the lower jaw the three real molars do not materially differ in point of size. They are narrower than those of the upper, have their tubercles arranged in a single longitudinal series, a single large one in the centre, and a smaller on each side.

"The *Yapock* has very large cheek-pouches which extend far back into the mouth, and of which the opening is very apparent. This circumstance, hitherto unobserved by zoologists, throws considerable light upon the habits of this rare animal, which thus appears, like the *Ornithorhynchus*, to feed upon freshwater *Crustacea*, and the *larvæ* of insects, spawn of fishes, &c. which it probably stows away in its capacious cheek-pouches. For 2 inches at the root the tail is covered with the same description of fine close fur as the body; from this part it tapers gradually to the point and is covered with small scales, arranged in regular spiral rows, and interspersed with bristly hairs, particularly on the under surface, a fact perfectly conclusive against the generally received opinion of this organ being prehensile in the *Chironectes*. Indeed, the tail so perfectly resembles that of the *Hydromys chrysogaster*, even to the white tip, that it would be impossible to distinguish these organs if separated from the respective animals. The useless appendage of a prehensile tail



to an aquatic animal, must consequently be henceforth discarded from the history of the *Chironectes*, and the animal allowed to take its place among conterminous genera, not as a compound of anomalous and contradictory characters, but as a regular component link in the scale of existence. That its habits are purely aquatic, and that it has not the power of ascending trees, is further proved by the structure of the extremities. The hind feet are broad like those of the *Beaver*; the toes, including the thumb, united by a membrane, and, with the exception of the thumb, provided with small falcular claws; the thumb, as in all the other *Didelphidous Pedimana*, is without a claw. The fore-fingers are separate, very long and slender, (the middle and ring-fingers the longest of all,) and the last joint expanded and flattened as in the *Geckos*. The thumb is placed rather behind the general line of the other fingers, and seems at first sight to be opposable: it perfectly resembles those of the *American Monkeys*. The claws are very small and weak; they do not extend beyond the points of the fingers, nor even so far, and are absolutely useless either for climbing or burrowing. Considerably behind the others, on the outside of the wrist, there is a lengthened tubercle resembling a sixth finger, but much shorter than the others and without any bone. What purpose this unique organ may serve in the economy of the animal's life, it is impossible to conjecture, but the long slender fingers are probably used to pick out the food which it carries in the cheek-pouches."—W. O.

June 14, 1836.

William Yarrell, Esq., Vice-President, in the Chair.

specimens were exhibited of various *Birds* from Northern Africa, which had recently been presented to the Society by Sir Thomas Reade, Corr. Memb. Z.S. They included the *Anas marmorata*, Temm., on which Mr. Gould remarked that in the form of the bill it approached nearly to the *Pin-tailed Duck*, *Anas acuta*, Linn., although it is altogether destitute of the elongation of the middle tail-feathers which occurs in that bird; the *crested Duck*; the *Gad-wall*, the *Garganey*; the *Ruff*, and the *black-tailed Godwit*, in their winter dress; the *Golden Oriole*; and other species: all of which were severally brought under the notice of the Meeting by Mr. Gould, at the request of the Chairman.

Mr. Gould subsequently exhibited specimens of various *Birds* which he had recently received from M. Temminck: including a new species of *Ptarmigan* from Siberia; and a *Trogon* from the Indian Islands, nearly allied in almost every particular to the *Troglodythrocephala* of the Himalaya, but having the wing fully an inch shorter, with a tail bearing a relative proportion.

The Secretary announced the arrival in the Menagerie, since the last Meeting of the Society, of the four *Giraffes*, the capture of which was described by M. Thibaut in a letter read at the Meeting on February 9, 1836, and translated in the 'Proceedings' at p. 9.

He also directed the attention of the Members to a specimen of *Temminck's Horned Pheasant*, *Tragopan Temminckii*, Gray, which had recently been added to the Menagerie by the liberality of J. R. Reeves, Esq., of Canton: to a pair of the *Serim Finch*, *Fringilla Serinus*, Linn., brought from Italy for the Society, and presented to it by Mr. Willmott; and to a monstrous variety of the *Indian Tortoise*, *Testudo Indica*, Linn., which had also been lately added to the Menagerie, and which is remarkable for the great irregularity of the surface of its shell, each of the plates being raised into high conical eminences.

A paper was read by Mr. Martin "On the Osteology of the *Sea Otter*, *Enhydra marina*, Flem." It is founded on a perfect skeleton of the animal contained in the collection made by that energetic traveller the late David Douglas, and acquired, subsequent to his decease, by the Society. This skeleton was exhibited.

Mr. Martin refers in the first instance to the dentary characters of this remarkable animal, which were correctly described and

figured by Home in the 'Philosophical Transactions' for 1796; and then adverts to some erroneous statement which have since been made respecting its molar teeth by various authors, including Cuvier, who appear to have possessed no opportunities of examining specimens. In the course of his communication he describes in detail the number and form of the teeth, which consist of six incisors in the upper jaw and of four in the lower, the outer one on each side in either series being larger than the others and assuming, in the upper jaw, somewhat of the form of the canines; of a strong canine on each side of the incisors in either jaw; and of four molars on either side in the upper, and five in the lower jaw, of which two in the upper and three in the lower are false and successively increase in size towards the true molars, the latter being large, broad teeth, with flattened crowns somewhat depressed in the middle: in the upper jaw the hindermost of the true molars is much larger than the other, while in the lower it is comparatively small.

The total length of the skeleton is 3 feet 2 inches; of which the skull measures 5 inches, and the tail, 10.

The general form of the skull nearly resembles that of the *Common Otter*, *Lutra vulgaris*, Storr; but it is proportionally broader, and is more convex on its lateral *parietes*, in this respect approaching to many of the *Seals*: the nasal bones form a broad plane, and do not gradually decline, like those of the *Common Otter*, towards the nasal opening; they are also shorter in proportion than in that species: the breadth of the nasal opening is greater than its depth, proportions which are reversed in the *Common Otter*: the post-orbital space is less contracted: on the base of the skull the space between the pterygoid processes is more considerable; and the whole contour of the *cranium* is not only broader but deeper also. The lower jaw maintains the same general tendency to greater compactness, and is stouter and shorter than in the *Common Otter*.

Detailed admeasurements are given by Mr. Martin of the skull of an individual more advanced in age than the one whose skeleton is preserved, and in which the entire length of the *cranium* is 5 inches; the greatest breadth, being across the occipital ridge behind the auditory *foramen*, nearly 4 inches, the breadth between the *zygomata* being the same; the depth from the point of union of the inter-parietal with the occipital ridge to the *foramen magnum*,  $1\frac{1}{2}$ ; the distance from the *foramen magnum* to the bony palate,  $2\frac{1}{2}$ ; and the length of the bony palate,  $2\frac{1}{4}$ .

The chest is rather wide in form, but much compressed; being 6 inches across at the sixth rib, while its greatest depth from the vertebral column to the *sternum* is  $2\frac{1}{2}$  inches. The direction of the ribs is obliquely backwards, and they are rather slender: their number is thirteen, (not fourteen, as is stated by Home,) the last five being false and attached by very long cartilages to the cartilages of the true ribs.

The lumbar *vertebræ* are six in number.

The anterior extremities are short and small. The *scapula* is 3 inches in length and 2 in its greatest breadth: its spine is feeble and but slightly elevated. The *humerus* is 3 inches in length; and is stouter and less laterally compressed than that of a *common Otter* of the same longitudinal dimensions. The *ulna* and *radius* are stout, and are separated from each other by a greater interval than in the *common Otter*. The paws are remarkable for their diminutive size. In the *common Otter*, from the extremity of the *radius* to the nail of the last *phalanx* of the third finger the measurement is 3 inches; in the *Enhydra* it is  $2\frac{1}{4}$ .

The *pelvis* is long and narrow, measuring from the crest of the *ilium* to the *tuber ischii* 6 inches: in the *common Otter*, the measurement is but 4. The iliac bones are remarkably thick and solid, and turn out from the spinal column. The distance from the centre of the *acetabulum* to the crest of the *ilium* is 3 inches; the breadth of the *ilium*  $1\frac{1}{2}$ .

It is in the posterior limbs that the great power of the *Enhydra* appears to be developed. The *os femoris* is short but very thick, and its *trochanter* is bold and prominent: the *trochanter minor* is small. The head of the *femur* is globular, and is destitute of the *ligamentum teres*, as in the *Seals*: in the *Otter* this ligament exists as usual. The length of the thigh bone from the great *trochanter* to the condyles is  $3\frac{1}{2}$  inches. Both the *tibia* and *fibula* are large and of great comparative length: in the *common Otter*, they do not exceed the *femur*; but here they exceed it by more than an inch, the measurement being  $4\frac{1}{2}$  inches.

It is in the hind paws or paddles, Mr. Martin remarks, that the greatest difference exists between the *Otter* and the *Enhydra*. They are here admirably constructed as organs of aquatic progression. Their length from the *os calcis* to the last *phalanx* of the outer toe is  $7\frac{1}{2}$  inches; and as the toes are long and connected by intervening webs they form broad efficient oars. The toes graduate regularly from the inner toe, which is the shortest, to the outer or fifth toe, which is the longest. The metatarsal bone of the inner toe measures  $1\frac{1}{2}$  inch, the toe analogous to the thumb and composed of only two *phalanges* measures the same—the other toes have three *phalanges* as usual; the metatarsal bone of the fifth toe measures  $2\frac{1}{2}$  inches; the toe itself 3 inches. The breadth of the foot, measured obliquely across from the end of the metatarsal bone of the first toe to that of the fifth is 2 inches.

The nails of the fore paws are small and sharp; those of the paddles are blunt, but curved.

The *os penis* is a stout bone  $3\frac{1}{4}$  inches in length.

Mr. Martin concluded by remarking that as the hinder extremities are placed far backwards, and when stretched out in the act of swimming exceed the tail, this organ will appear placed between them, almost as much as it is in the *Seals*; between which animals and the *Otters* the *Enhydra* forms, in his estimation, a palpable link

of union, approximating, in some portion of its osseous structure even more to the former than to the latter.

Mr. Martin added that it was his intention, with the view of rendering his communication more complete, to review the osteology of the *Euhadra* in detailed comparison with that of the common *Otter* and of the *Seal*.

A drawing was exhibited of a *Saurian Reptile* of the family *Scincidae* and of the genus *Tiliqua*, Gray, which forms part of the Museum of the Army Medical Department at Chatham, and which is regarded by Mr. Burton, Staff-Surgeon, in charge of the Museum, as hitherto undescribed.

It was accompanied by the subjoined character and description by Mr. Burton.

**TILQUA FERNANDI.** *Til. auribus profundis, latis, margine antico simplici; squamis dorsalibus valdè tri-carinatis; suprâ pallidè brunnea strigis saturatioribus ornata, infrâ albescens; lateribus brunneo variis alboque maculatis; gula brunneo lineatâ.*

Long. corporis capitisque 6 unc.; capitis collique, 2½; caudæ, ?

*Hab.* apud Fernando Po.

“There are eight rows of hexagonal imbricated scales on the back and tail, and two additional rows between the fore and hind legs; the lateral scales are irregular in form and size. Submental scales large, in three transverse rows; the first containing a single scale, the second a pair, the third a pair with an intermediate rudimentary one. Subcervical and ventral scales in eight rows; subcaudal in five rows, of which the middle row is the larger. There is a single row of anal scales, curved upwards. Scales of the upper surface of the body 3-keeled, of the lower smooth. A semicircular series of five plates over each orbit separated by a long narrow frontal: five occipital plates, the posterior ones largest: nasal, post-nasal, and labial plates varied in form and size.

“Head, back, tail and upper surface of the extremities reddish brown, a blackish line intersecting each row of scales; sides lighter, marked by a series of irregular blackish streaks; belly and under surface of tail a brownish white; throat alternated longitudinally with light and dark-brown lines; submental scales whitish, bordered with a broad dark-brown edge.

“A single row of blunt teeth on the margin of the jaws.

“Body of nearly uniform shape from the commissure of the lips to the tail.”

June 28, 1836.

William Yarrell, Esq., V.P. in the Chair.

A note addressed to Colonel Sykes by Lieut. Henning, R.N., was read. It noticed the capture of an *Albatross* by a hook, and stated that the bird, while so attached, was fastened on by another of the same species, but whether with the intention of endeavouring to release it, or with the view of taking advantage of its helpless condition, the writer did not attempt to determine.

Some observations were read by Mr. Gray "On the genus *Moschus* of Linnaeus, with descriptions of two new species."

The only character, Mr. Gray remarks, by which this genus, as established by Linnaeus and others, differs from the genus *Cervus*, consists in the absence of horns; for the elongated canines are common to it and most of the Indian species of *Cervus*, especially the *Cerv. Muntjac*. The character of the fur, the degree of hairiness or nakedness of the *metatarsus*, and the presence or absence of the musk-bag in the male, offer, however, good characters for the subdivision of the group into three very distinct sections or subgenera.

The first of these divisions, for which Mr. Gray would retain the name of *Moschus*, comprehends only the *Thibet Musk*, *Moschus moschiferus*, Linn. In common with the *Deer* and *Antelopes* it has the hinder and outer side of the *metatarsus* covered with close erect hair; like many of the *Deer* also, its fur is quill-like and brittle; it has, moreover, a throat entirely clothed with hair; and the males are provided on the middle of the abdomen with a large pouch secreting musk. Its young, like those of most of the *Deer*, are spotted, while the adult animal is plain-coloured.

The division to which Mr. Gray in the year 1821, in a paper in the Medical Repository, gave the name of *Meminna*, also consists of but a single species, the *Moschus Meminna*, Linn. In this group the hinder edge of the *metatarsus* is covered with hair, but there is on its outer side, a little below the hock, a rather large smooth naked prominence, which is flesh-coloured during life; the fur is rather soft, spotted and varied with white, which becomes less conspicuous in the older specimens, but does not appear ever to be entirely lost; the throat is entirely covered with hair; and there is no musk-bag in either sex. The false hoofs are distinct, although denied to the animal both by Linnaeus and Buffon.

The third and last subdivision is characterized by Mr. Gray, under the name of *Tragulus*, as having the hinder edge of the *metatarsus* nearly bald and slightly callous, a character which distinguishes them at once from all other *Ruminants*; the fur is soft, and adpressed like that of *Meminna*, but not spotted even when young; the throat is

provided with a somewhat naked, concave, subglandular, callous disk, placed between the rami of the lower jaw, from which a band extends to the fore part of the chin; and they have no musk-bag. Like all the other species of the Linnæan genus *Moschus*, they have false hoofs; and most of them have the edges of the lower jaw, three diverging bands on the chest, and the under surface of the body more or less purely white. The species of this division scarcely differ in colour in the various stages of their growth; the young fawn resembling the adult in every particular except in size.

In this division, the synonymy of which is extremely confused, Mr. Gray reckons four species, two of which he describes as new, arranging and characterizing them as follows:

*MOSCHUS JAVANICUS.* *Mosch. ferrugineus nigro variegatus; collo saturatè brunneo griseo nebulato; menti margine, strigis pectoralibus tribus posticè latioribus, pectore, abdomine, femoribus internè, caudæque subtus, albis; pedibus, capitis lateribus, primumque nitidè fulvis; occipite nigrescenti.* Long. corp. capitisque simul poll. 24; metatarsi 4½ poll.

*Moschus Javanicus*, *Gmel., Syst. Nat.* 1. p. 174. ex *Pallasio. Raffles in Linn. Trans.* viii. p. 261? *Benn., Zool. Gard.*, p. 41.

*Tragulid Javanicus*, *Pall., Spic. Zool.* ii. p. 18. in nold.

*Moschus Indicus*, *Gmel., Syst. Nat.* 1, p. 172.

*Cervus Javanicus*, *Osbeck, Iter*, p. 273.

*Moschus Napu*, *F. Cuv. Mamm.* t.

Chota Beta, *Rou de Ramon, Cab. Madr.* t. 9.

*Hab.* in Insulis Javâ et Sumatrâ.

This species, Mr. Gray states, is at once known by its larger size, pale colour, and the white of the entire under surface of the body, with the exception of the two longitudinal dusky stripes which separate the three white stripes of the chest from each other, and of a simple narrow pale band across the chest.

2. *MOSCHUS KANCHIL.* *Mosch. fulvus, nigrescenti variegatus; nucha strigè latè nigra longitudinali; gula, colli corporisque lateribus, pallidè flavescentibus, pilis nigro-apiculatis; antipedibus nitidè fulvis; menti marginibus, strigis tribus pectoralibus, pectore, abdomine, femoribus posticè, caudæque subtus, albis; pectore abdomineque strigè longitudinali, in illo saturatiore, in hoc pallidiore.* Long. capitis corporisque simul poll. 20; metatarsi 3½ poll.

*Moschus Kanchil*, *Raffles in Linn. Trans.* viii. p. 262.

Le Chevrotain adulte, *Buffon, Hist. Nat.* tom. vii. p. 344.

Le Chevrotain de Java, *Buffon, Hist. Nat. Suppl.* tom. vi. p. 219. t. 30.

Javan Musk, *Shaw, Zool.* t. 173, ex tab. *Buffon.*

*Hab.* in Javâ.

This species Mr. Gray states to be easily distinguishable from the former by its smaller size; darker colour; the strength and distinctness of its nuchal streak; the width of the band across its chest,

which is besides continued backwards into a narrow streak; and the yellow band along the middle of the belly. These characters are common to two specimens of different ages in the collection of the British Museum. The lateral white streaks on the fore part of the chest are linear, the median one subtriangular, being narrow in front and widening backwards. The two dark streaks by which they are separated are linear, of the same colour with the sides of the neck, and do not unite together in front.

3. *MOSCHUS FULVIVENTER*. *Mosch. fulvus, nigrescenti variegatus; nuchâ strigâ longitudinali latâ nigra; guld, colli lateribus, antipedibusque rufescenti-fulvis; lateribus subtusque flavescenti-fulvis; menti marginibus, strigis tribus pectoralibus, strigâ latâ utrinque in pectore abdomineque, femoribus internè anticèque, caudâque subtus, albis.*

Le jeune Chevrotain, Buffon, *Hist. Nat. vii. p. 342. t. 42, 43.*

*Hab.* in Insulis Malaicis, et in Peninsulâ Indiæ Orientalis?

Very like the last, but differing from it in the under surface being pale fulvous with four white streaks, and in the lateral streaks on the chest being isolated anteriorly by means of a narrow transverse band which separates them from the white of the chin, while the median one is bounded in front by the union of the two dark streaks. There is also a small brown spot on each side of the chin just below the angle of the mouth, which is not found in the other species. The fawns only a few weeks old do not differ in colour from their parents. None of the three specimens in the collection of the British Museum have their habitats accurately marked. Two of them were from the collection of General Hardwicke, and the third was presented by Mr. Edward Burton of Chatham. Mr. Gray thinks it probable that this may be the animal indicated by Sir Stamford Raffles under the name of *Pelandoc*.

4. *MOSCHUS STANLEYANUS*. *Mosch. rufescenti-fulvus, pilis nigro-apiculatis, subtus minùs nitidus; collo pectoreque nitidè fulvis; menti marginibus, strigis tribus pectoralibus, pectore, femoribus internè anticèque, caudâque subtus, albis; syncipite, pedibusque a genibus inde saturatoribus; rhinario, strigâ utrinque oculos ambiente, auriculisque extus et ad margines, nigris.*

*Var. menti marginibus minùs albis; strigis pectoralibus interruptis minùs conspicuis; guldque paulò saturatiore.*

*Hab.*

This is immediately distinguishable from all the other species by the brightness of its colouring, and by the absence of the nuchal streak, and of the white on the under surface of the body. There are at present four living specimens in the magnificent collection of the Earl of Derby at Knowsley; and two others, consisting of a specimen of each of the varieties, in that of the Society, to which they were recently presented by Her Royal Highness the Princess Victoria. It is not known from what exact locality any of them were obtained.



Mr. Gray discusses the synonymy of the species above characterized as belonging to the subgenus *Tragulidæ*, especially with reference to the descriptions of Buffon, Pallas, Raffles, and M. Frederic Cuvier. From the imperfect manner in which they are described and figured, he is unable to identify with any of the foregoing species, or to separate from them as distinct, the *Pelandoc* figured in Mar-den's Sumatra, or the *Pygmy Musk* of Sumatra figured in Mr. Griffith's edition of Cuvier's 'Animal Kingdom,' on which Fischer has established his *Moschus Griffithii*. The *Mosch. pygmaeus* of Linnaeus Mr. Gray states to belong to the genus *Antelope*; the hinder part of the tarsus being covered with hair, and the false hoofs very small and rudimentary, and entirely hidden under the hair of the feet; the *Mosch. Americanus* appears by its spotted livery to be the fawn of a species of *Deer*: and the *Mosch. delicatulus*, or *Leverian Musk* of Shaw, is also undoubtedly the fawn of a *Deer*. It is curious that Dr. Shaw quotes as a synonym of the last-named species the figure of Seba, on which alone the *Mosch. Americanus* is founded, while at the same time he enumerates the *Mosch. Americanus* as a distinct species.

Mr. Gray also made some observations "On the tufts of hair observable on the posterior legs of the animals of the genus *Cervus*, as a character of that group, and a means of subdividing it into natural sections." These tufts are found on the inside, or on the outside, or sometimes even on both sides, of the hinder legs of all the *Deer* which Mr. Gray has had an opportunity of examining, with the exception of the *Muntjac*, on which he has not been able to detect them either in the living state or in preserved skins. This circumstance may, however, have arisen from the fact of the living animal examined being confined in a cage; for he has uniformly found them much more conspicuous in animals which have a wide range than in such as are confined to small inclosures. Thus the various species of *Deer* in the magnificent parks of the Earl of Derby at Knowsley, in which the Ruminant animals are allowed an extensive range, and preserved in a state nearly approaching to wildness, exhibit the tufts in question in a much more ample state of development than such as are seen in menageries; and one of the *Axis Deer* at the Gardens of the Society, which has the run of a small paddock, displays them much more evidently than another specimen in the Gardens, which is confined to a stall. This difference of development, Mr. Gray suggests, may account for the little notice that has hitherto been taken of them by zoologists, who have only spoken of them incidentally, and with reference to one or two species of the group. They are found at all ages and in both sexes; and afford, therefore, a valuable adjunct in the determination of the species of the hornless females, as well as in distinguishing them from the females of the genus *Antelope*, in which no indication of them is to be observed; the tufts or *scope* that occur in some of the species of that genus being on the fore knees and evidently serving a very different purpose.

They were noticed in the *American Deer* by Buffon, who speaks of them as surrounding “*un lichen noirâtre long de neuf lignes, fort étroit, entouré par des poils blancs et longs, qui paroissent former aussi une sorte de brosse* ;” and according to M. F. Cuvier, who observed them in the *Wapiti*, they surround a narrow long horny substance, which is the appearance of the part in the dry state; but Col. Hamilton Smith, in his description of the same species, takes a different view of the structure with which they are connected, which he states to be “a gland imbedded in hair secreting an unctuous fluid.” That the tufts really cover a glandular apparatus is rendered probable by the circumstance that in the living animal they generally assume a conical form as though imbued with some oily secretion; and the specimens preserved in spirit which Mr. Gray has examined, seem to justify this opinion; but he has had no opportunity, since his observations upon the subject were made, of confirming the fact by anatomical examination. They are generally of a paler colour than the rest of the hair upon the legs; and in some species, the *Cervus Virginianus* for instance, they are of a pure white which renders them very conspicuous.

To the existence of these tufts as a generic character common to all the *Deer*, Mr. Gray states that, among the species which he has had an opportunity of examining, he has met with only one exception, that of the *Muntjac* before mentioned; and he thinks that if this animal should prove to be really destitute of the appendages in question, it would afford an additional motive, combined with the permanence of its horns and some other characters, for excluding it from the genus *Cervus*. But these tufts have also another value, that of affording by the differences in their number and position three obvious sectional divisions, which have an evident advantage over those derived from the form of the horns and other characters of a sexual and temporary nature, in being permanent at all ages and common to both sexes. These sections Mr. Gray arranges as follows:

The first has a pencil of hairs seated on the outer side of the hinder part of the *metatarsus*, about one third of the distance from the *calcaneum* towards the hoofs. This section includes *Cerv. Elaphus*, *Canadensis*, *Axis*, *porcinus*, *Hippelaphus*, *Dama* and its varieties, and *niger*, as well as the *Stag* in the Museum of the Society, called the greater *Muntjac*, *Cerv. Tunjuc*, Vig. and Horsf., in the Catalogue for 1829, p. 17, No. 303, which Mr. Gray believes to be a species of the Rusan group of Col. H. Smith with deformed horns. In *Cerv. Canadensis*, and perhaps also in some other species, Mr. Gray states that there is a large pad of close erect hairs on the hinder edge of the *metatarsus*, commencing with this tuft.

In the second section there exist two tufts of hair, one seated on the outer side of the hinder part of the *metatarsus*, about two thirds of the distance from the *calcaneum* to the hoof; and the other on the inner side of the hock or heel. This structure occurs in the *Virginian Deer*, *Cerv. Virginianus*, and in its variety *Cerv. Mexicanus*, as well as in an allied species of which the female exists in the Society's Museum. The internal pencil is very distinct in the *Virgi-*

*nian Deer*; and the external is also very conspicuous in consequence of the whiteness of the hairs composing it. Lord Derby's gamekeeper, however, stated to Mr. Gray that there are two varieties of this species in Knowsley park, in one of which this tuft is much more conspicuous than in the other.

The third section comprehends those species which have a very distinct tuft on the inside of the hock, but none on the outside of the *metatarsus*. Mr. Gray has observed this structure in two living specimens of a species from Demerara in the menagerie of Lord Derby, which agrees best with *Cerv. rufus*, Desm.; in another South American species, allied to the former but apparently different, which was presented to the Society in 1828 by Sir Philip Egerton, and is now in its Museum; and in a very young spotted *Fawn* (almost a fœtus) preserved in spirits in the collection of the British Museum. He suspects that the *Brockets* of South America may have the same character; and thinks he could observe the internal tufts on the specimen of the *Rein Deer* in the Society's Museum, but no trace of the external, the entire hinder edge of the *metatarsus* being covered with a uniform very thick coat of hair.

From an examination of the skin of the *Elk* in the British Museum, Mr. Gray is of opinion that it will probably enter into a fourth section; in as much as it appears to have very distinct tufts on the inner side of the hock, and others also on the outer side of the *metatarsus* about one third of its length from the heel, as in the first section; but of the existence of the latter tufts he is by no means certain, on account of the age and state of the specimen.

July 12, 1836.

Thomas Bell, Esq., in the Chair.

Mr. Waterhouse, at the request of the Chairman, read a Paper, entitled "Description of a new genus of *Mammiferous Animals* from New Holland, which will probably be found to belong to the *Marsupial* type."

The skin on which this description was founded had been lent to Mr. Waterhouse, for the purpose of describing, by Lieut. Dale, of Liverpool, who procured it whilst on an exploring party in the interior of the Swan River Settlement, about 90 miles to the S.E. of the mouth of that river. Two specimens were seen; both of which took to hollow trees on being pursued, and one of them was unfortunately burned to death in the attempt to dislodge it from its retreat. The country abounded with decayed trees and ant-hills; and Mr. Waterhouse is of opinion, from this circumstance and from some peculiarities in the structure of the animal, that it lives chiefly, if not wholly, upon ants, for which reason he proposes for it the generic name of

MYRMECOBIUS.

Dentes incisores  $\frac{9}{6}$ , canini  $\frac{0-0}{1-1}$ , pseudo-molares  $\frac{5-5}{4-4}$ , molares  $\frac{3-3}{3-4}=48$ .

Pedes antici 5-dactyli, digitis tribus intermediis longioribus; postici 4-dactyli, digitis duobus intermediis internum superantibus; externo brevissimo; unguibus longis acutis subfalcaribus. Scelides antipedibus longiores. Caput elongatum; rhinario producto; auriculis mediocribus acutis. Corpus gracile. Cauda modicioris.

Mr. Waterhouse details at length the peculiarities of the dentition and other structural characters of the animal under consideration, and particularly notices the statement of Lieut. Dale that, when it was killed, the tongue was protruded from the mouth to the extent of two inches beyond the tip of the nose, its breadth being three sixteenths of an inch; which circumstance, combined with the dentition of the animal, confirms him in the belief that it feeds upon ants. With respect to its immediate affinities he confesses himself at a loss. In skinning the specimen, the part where the pouch would be placed in a marsupial animal, has been so mutilated as to render it difficult to determine whether or not it possessed one: it appears, however, to have been a female, and to have two *mammæ* and the remains of a pouch. Mr. Waterhouse is of opinion that it will prove to be allied to the genus *Phascogale*; and there are also, he states, points of resemblance between it and *Tupaia*, as well as with the ground Squirrels, the genus *Tamias* of modern authors.

The species Mr. Waterhouse proposes to name *Myrmecobius fasciatus*: he describes it as follows: "Length from the nose to the root of the tail (measuring along the curve of the back) ten inches;

No. XLIII.—PROCEEDINGS OF THE ZOOLOGICAL SOCIETY.

of the head, from the tip of the nose to the base of the ear, one inch and seven eighths; of the tail six inches and a quarter. The colour above is reddish ochre, interspersed with white hairs, the posterior half of the body being adorned with alternate black and white transverse fasciæ, disposed in a manner somewhat similar to those of *Thylacinus cynocephalus*. The under parts of the body are yellowish white; the anterior legs of the same colour on their inner sides, and of a pale buff colour externally; and the posterior legs of a pale buff colour, with the fore part of the tibiæ whitish, and the sole entirely bare. The hairs of the tail are mixed black, white and reddish ochre, each of these colours predominating in different parts. The reddish hue of the fore part of the body is gradually blended into the black, which is the prevailing colour of the posterior half, and which is adorned with nine white fasciæ; the first of these fasciæ (which is indistinct) commencing rather before the middle of the body, and being, in common with the second, interrupted on the back by the ground colour of the body; the third, fourth, and last extending uninterruptedly from side to side; and the fifth, sixth, seventh and eighth, extending over the back, passing without coming into contact, and thus as it were dovetailing, with those of the opposite side. The hair on the head is very short and of a brownish hue above, (being composed of a mixture of black and reddish-brown with a few white hairs); and whitish beneath. The nose and lips are blackish; and there are a few long black hairs springing from under the eyes and from the sides of the muzzle. The body is covered with hair of two kinds; the outer of which is moderately long, rather coarse, and compact on the back and fore parts of the body; but over the haunches, and on the under surface, where the pouch is situated in the *Marsupials*, the hair is long. The under fur is short, fine and rather scanty. The tail is furnished throughout with long hairs."

In illustration of his paper Mr. Waterhouse exhibited the skin, together with drawings of the animal, of its skull, and of its dentary characters.

The following notes of the dissection of a specimen of the *Chilian Bush Rat*, *Octodon Cumingii*, Benn., by Mr. Martin, were read.

"The individual examined was a male measuring in the length of the head and body 7 inches: the tail was imperfect.

"On removing the skin from the chest and *abdomen*, the shape of the xiphoid cartilage was observed to be reniform.

"The abdominal cavity being exposed, the order of the *viscera* was as follows. Occupying its usual situation the liver extended from side to side, while below its edge appeared a portion of the great curvature of the stomach, and also the *pylorus* emerging from beneath its right lobes; the *duodenum* passing from the *pylorus* suddenly dipped down, crossed the upper end of both kidneys, and then made a curve upwards and merged in the *jejunum*. The chief portion of the abdominal cavity, of comparatively spacious volume, was filled with the convolutions of the intestinal canal.

"The liver (which was highly disorganized) consisted of two nearly equal left lobes, and of two right lobes of which the outermost was partially divided, but not so completely as to make the number of right lobes three. The *lobulus Spigelii* was small.

"In a cleft in the first or central right lobe, a little to the right of the *ligamentum latum* (which was thin), appeared the gall-bladder, small, globular, and empty: its duct received several small hepatic tubes, and entered the *duodenum* half an inch below the *pylorus*.

"The spleen was attached to the lower part of the *oesophagus* and the cardiac *sacculus* by a riband of mesentery, half an inch in breadth when extended. In figure this *viscus* was pointed at both ends, and three-sided, or prismatic: its length was  $1\frac{1}{2}$  inch; its greatest breadth half an inch.

"Beneath the cardiac portion of the stomach and the spleen, lay the *pancreas*, a soft indefinite mass spreading through the mesentery: a portion of it followed the course of the *duodenum* for about an inch. Its duct entered the intestine along with the biliary duct.

"The stomach, 2 inches in length, and somewhat more than 1 inch in depth, was of a regular figure, its cardiac *sacculus* projecting but little beyond the entrance of the *oesophagus*; between which and the pyloric opening there intervened a good distance, (about  $\frac{3}{4}$  of an inch). The pyloric portion of the stomach was of equal volume with the cardiac, and did not diminish rapidly but was globular. Internally, the stomach had a cuticular and villous portion; the cuticular lining, occupying about a third of the whole, covered the cardiac end, commencing anterior to the entrance of the *oesophagus*.

"The small intestines measured 2 feet 6 inches in length.

"The *cæcum* was large and sacculated, being puckered into *sacculi* by two strong muscular bands. It measured 3 inches in length, was loaded with fecal matter, and was ulcerated through in several points, from which the *feces* had escaped in small quantity. It was so tender that it could not be distended.

"The *colon* formed a loop 5 inches in length, analogous to that which exists in *Capromys* and *Coypus*: at the part where the intestine leaves this duplicature the *feces* assumed distinct oval forms. The first length of this fold or loop of the *colon* was larger than the second or returning length; and this portion with the rest of the large intestines scarcely equalled the small in diameter.

"The total length of the large intestines was 1 foot  $5\frac{1}{4}$  inches.

"The right kidney was placed higher than the left: the kidneys were of an oval shape, and  $\frac{1}{4}$  of an inch in length. The *papilla* was large and single.

"The renal capsule was of the size of a pea, round, of a yellowish grey colour, and soft internally.

"The lungs consisted of three right and two left lobes.

"The heart presented nothing remarkable.

"The *penis*, measured from the *pubis*, was  $1\frac{1}{2}$  inch in length. The *glans* was supported by an osseous stylet, and its upper surface was rough with numerous minute but horny retroverted *papillæ*. At the orifice of the *urethra* were four long, conical, horny *papillæ*,

projecting forwards, two on each side: they appeared to be four of the horny *papillæ* of the *glans* elongated and developed, for these *papillæ* surrounded their base and were there rather larger than lower down on the *glans*.

"I found, as in *Capromys* and *Coypus*, a decided decussation of the pubic pillars of the *recti abdominis* muscles.

"The *testes*, of an oval shape, were within the *abdomen*, as high as the top of the haunch bones;—the *epididymis* formed a knot at the end of the *testis*, adhering closely to it, whence it sent a tube along the *testis* to the opposite or small end; arriving there it formed a knotted congeries of fine convolutions, from which emerged the *vas deferens*. To this congeries there proceeded from the abdominal ring (which was imperforate) a muscular, tubular sac, or *cremaster*, the fibres of which embraced it. The ring being imperforate, the *testis*, I imagine, never passes externally into the groin.

"The *vas deferens* emerging from this congeries of tubes, turned round, crossed the small end of the *testis*, and descended over the *vesicula seminalis* of its own side.

"The *vesiculæ seminales* were 1 inch in length, slender and convoluted.

"The prostate gland was double; Cowper's glands were of the size of peas, and round. The membranous part of the *urethra* was  $\frac{2}{3}$  of an inch in length.

"The *fauces* were not funnel-shaped, but constricted by a lateral pillar rising up from the base of the tongue on each side to the palate, which wants tonsils and *velum pendulum*: the aperture thus formed just admitted the top of a pencil. The *nares* opened 2 or 3 lines beyond this constricted portion just above the *rima glottidis*; they were not therefore visible, until the *fauces* were fairly laid open. The contraction of the *fauces* is less decided than in the *Coypus*."

July 26, 1836.

Richard Owen, Esq., in the Chair.

At the request of the Chairman, Mr. Gould exhibited specimens of two new species of *Birds* from the Friendly Islands and New Holland, of which he proposed to form a genus. He stated them to approximate, in his opinion, in nearly an equal degree to the genera *Lanius*, *Turdus*, and *Lamprotornis*; but believed that they might with propriety be arranged among the *Thrushes*. Their characters were given as follows:

#### APLONIS.

*Rostrum* capite paulò brevius, robustum, subcompressum; mandibulâ arcuatâ, ad apicem emarginatâ.

*Nares* basales, ovales, patulæ.

*Alæ* breves; remigibus 2do et 3tio longissimis, 1mo et 4to æqualibus.

*Cauda* brevis, lata, quadrata vel sub-bifurca.

*Tarsi* robusti; digitis magnis; unguibus magnis curvatis, hallucis præcipuè valido.

In both species the feathers of the head are lanceolate; and the general plumage above has a slight glossy hue, especially on the head and back of the neck. The species were characterized as follows:

16 \* **APLONIS MARGINATA.** *Apl. pileo metallicè brunneo; notæ saturatè brunneo, remigibus secundariis margine externo albescentibus; humeris ferè nigris; remigibus caudæque saturatè brunneis; rostro tarsisque nigrescenti-brunneis; gastræo pallidè brunneo, rachibus plumarum ferè albis.*

Long. tot.,  $7\frac{1}{2}$  poll.; *rostri* à rictu ad apicem, 1; *alæ*,  $3\frac{3}{4}$ ; *caudæ*,  $2\frac{1}{2}$ ; *tarsi*,  $1\frac{1}{4}$ .

*Hab.* in Insulis Amicorum.

This species formed part of a collection made by Mr. Mathews, who has lately visited these islands.

**APLONIS FUSCA.** *Apl. pileo et regione parotica obscurè nigro-splendentibus; notæ pallidè brunneo; gastræo pallidiore; remigibus caudæque brunneis; rostro tarsisque nigris.*

Long. tot.,  $6\frac{1}{4}$  poll.; *rostri* à rictu ad apicem, vix  $\frac{7}{8}$ ; *alæ*,  $3\frac{1}{2}$ ; *caudæ*,  $2\frac{1}{2}$ ; *tarsi*, vix 1.

*Hab.* ad ripas fluvii Murrumbidgee, in Novâ Hollandiâ Australi.



This species was collected, together with many other rarities, by Captain Sturt, during his expedition in the interior of Australia, and presented by him to the Society.





August 9, 1836.

Richard Owen, Esq., in the Chair.

A specimen was exhibited of an *Ortyx* which Mr. Gould regarded as hitherto undescribed.

At the request of the Chairman he pointed out the distinguishing peculiarities of the new species, which he named and characterized as follows :

**ORTYX OCELLATUS.** *Ortyx nigro-brunneus, dorso punctis rufo-brunneis adperso, lateribus oculis albi-flavidis notatis, femoribus nigris.*

Long. corp.  $6\frac{1}{2}$  unc. ; *alæ*,  $4\frac{1}{2}$  ; *tarsi*,  $1\frac{1}{2}$ .

Hæc species ad *Ort. Montezumæ* in affinitate proxima.

“ Bill black, strong, and arched ; top of the head, which is slightly crested, blackish brown ; a large white mark extends over each eye and passes on to the back part of the neck ; beneath the eye is an oval mark of blueish black ; from the base of the lower mandible extends another white mark which spreads upon the front of the neck and is bounded by an abrupt margin of black ; a large patch of the latter colour occupies the chin and throat ; the general colour of the whole of the upper surface is brownish olive, each feather having a decided central line of chestnut following the direction of the shaft and becoming spatulate at the tip ; the web of each feather is transversely barred and blotched with black ; the chest and abdomen is sandy chestnut, becoming more intense on the under tail-coverts ; sides of the chest and flanks transversely spotted with yellowish white on a blueish grey ground ; thighs black ; tail very short and partly hidden ; tarsi brown.

This bird differs from *Ortyx Montezuma* in several particulars, but to that species it is most nearly allied.

Mr. Gould also brought before the notice of the Meeting two new species of *Birds* from New South Wales, where they had been collected, and subsequently presented to the Society by Captain Sturt. They are referrible to the genus *Zosterops* of Messrs. Vigors and Horsfield ; a group among the *Sylviadæ*, and of which but two species were known at the time those gentlemen instituted the genus. Mr. Gould placed on the table six additional species, a portion of which was from the Society's collection, and the remainder from his own. In the course of his remarks, Mr. Gould adverted to the surprising augmentation of species which has now taken place in nearly every group in ornithology ; and characterized the new species mentioned above as

**ZOSTEROPS ALBOGULARIS, Gould.**

*Zost. corpore supernè, alis, caudæque, olivaceis ; dorso, tectricibus alarum, caudæque, castaneo-brunneis ; oculo plumulis albis circum-*

No. XLIV.—PROCEEDINGS OF THE ZOOLOGICAL SOCIETY.

*dato, genis macula nigra notatis; auricularibus griseis, gula, ventre, crissoque albis; lateribus castaneis; rostro pedibusque purpurascens-griseis*

Long. corp.  $5\frac{1}{2}$  unc.; rostri,  $\frac{7}{8}$ ; alæ, 3; cauda,  $2\frac{1}{2}$ ; tarsi, 1

Hab. in Australia, apud flumen Murrumbidgee dictum.

*ZOSTEROPS TENUIROSTRIS, Gould.*

*Zost. vertice capitis, nuchæ, gula, thoraceque viridi-flavis, oculo plumulis albis circumdato; dorso, scapulis, olivaceo-griseis, primariis rectricibusque viridi latè marginatis; ventre, crissoque brunneo-flavis, rostro pedibusque brunneis.*

Long. corp.  $5\frac{3}{8}$  unc.; rostri,  $\frac{7}{8}$ ; alæ,  $2\frac{5}{8}$ ; caudæ,  $2\frac{1}{8}$ ; tarsi,  $\frac{7}{8}$ .

Hab. in Australia apud flumen Murrumbidgee dictum.

They are the two largest known species of the genus.

Notes by W. C. Williamson, Esq., Curator to the Natural History Society, Manchester, on the appearance of rare Birds in the vicinity of Scarborough were then read, of which the following is an abstract.

"The prominent position of Scarborough with its projecting headlands separated by deep bays and its high hills covered with wood, render the neighbourhood a favourite retreat for various tribes of birds. Among the spring visitors the *Siskin* may be enumerated, which appears in April, remaining only a few days apparently on its route to breeding-places farther north. It is never seen at any other period of the year, though considered by authors as a winter visitor. Several examples of the *Hoopoe*, and one specimen of the *Roller*, have been shot in the neighbourhood. The stomach of the latter was filled with the *elytra* and other remains of a species of *Curculio*. Of the *Water Ouzel* or *Dipper* it is stated that, when flying down a stream it drops into the water and dives under any rails laid across from bank to bank, rather than fly over them, rising on the opposite side and pursuing its course. The nest of this bird is occasionally seen so placed under a projecting ledge that a fall of water was constantly rolling over it, thus rendering it secure from any attacks: the birds entering by the sides of the fall.

"The *Redwing* has been seen as late as May; these birds are remarkable for a peculiar cry uttered when disturbed and about to take flight.

"The *Hooded Crow* has been known to breed near Scarborough on two or three occasions. In one instance, a female *Hooded Crow* was observed to pair with a *Carriion Crow* on a large tree at Hackness, where they succeeded in rearing their young. The *Carriion Crow* was shot by the gamekeeper, but the following year the *Hooded Crow* returned with a new mate of the same sable hue as the former one to her old nest. The carrion and young crows were again all shot; the old female by her vigilance escaped all the efforts of the keepers to destroy her, and a third time returned with a fresh mate; she was not however again so successful, but was shot, and is now preserved in the Scarborough Museum. The young

birds varied, some resembling the *Hooded* and others the *Curlew Crow* in their plumage.

"The *Great* or *Thick-kneed Plovers* breed on the fallows, and often startle the midnight traveller by their shrill and ominous whistle. This is supposed to be the note so beautifully alluded to by Sir Walter Scott in his poem of *The Lady of the Lake*,

‘ And in the Plover’s shrilly strain  
The signal whistle’s heard again.’

for it certainly sounds more like a human note than that of a bird.

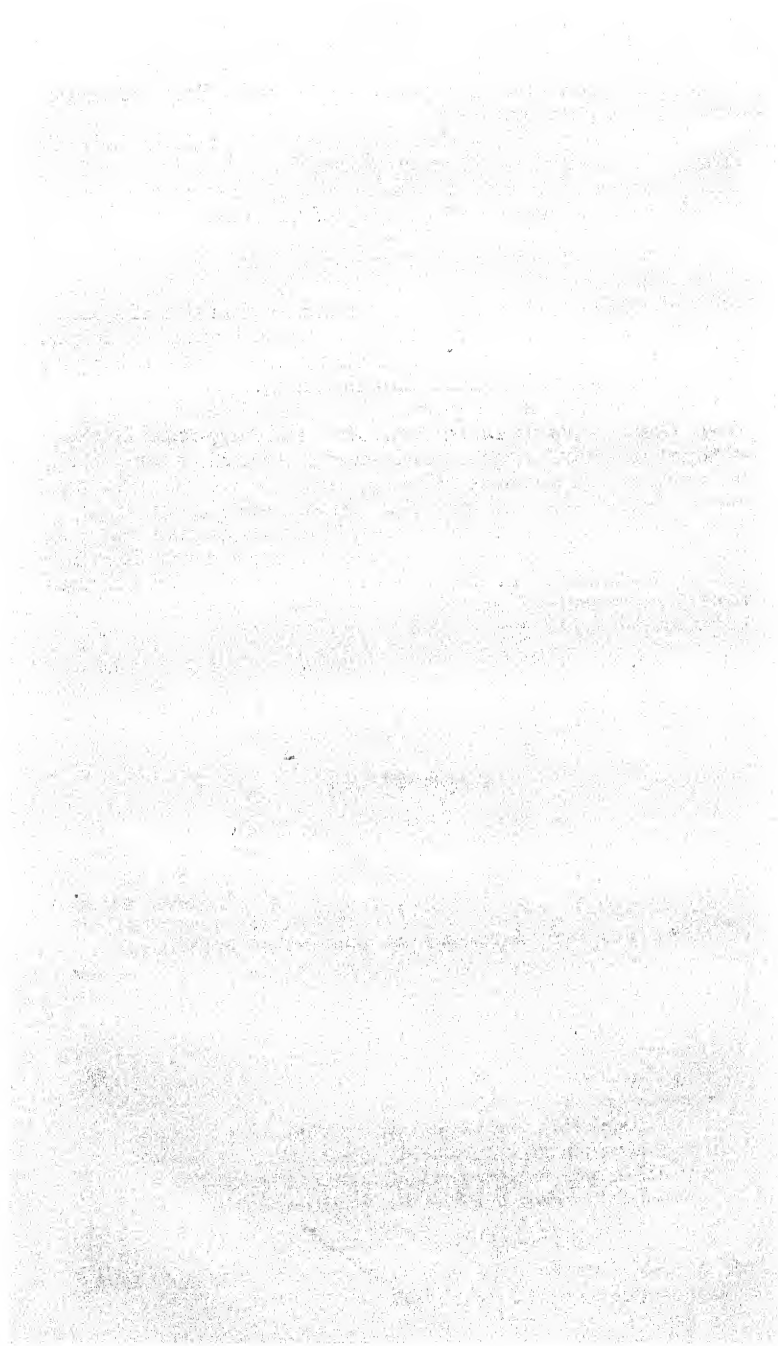
"The *Rough-legged Buzzard* breeds occasionally in a precipitous dell near Hackness. A marked female returned the following year with a new mate to her former favourite haunt.

"Three species of the genus *Lestris*, the *Glaucous Gull*, *Little Gull*, *Great Northern Diver*, *Little Auk*, and *Long-tailed Duck* are obtained generally during the prevalence of strong north-easterly winds. Temminck’s *Tringa* and the *Olivaceous Gallinule* have been killed near Scarborough. The *Sanderling* visits the shore in May and September. Good sport is sometimes gained at *Woodcock*-shooting in March, when from any cause these birds are prevented continuing their journey northward. In one or two instances a *Woodcock* has been seen there as late as June."

August 23, 1836

Thomas Bell, Esq., in the Chair.

In consequence of the lamented decease of the Secretary, E. T. Bennett, Esq., the usual routine of scientific business was suspended



September 13, 1836.

William Yarrell, Esq., in the Chair.

A communication was read from J. B. Harvey, Esq., of Teignmouth, a Corresponding Member of the Society, on the occurrence of four specimens of the *Verella limbosa* of Lamarck, which were found on the beach at Teignmouth after a continuation of southerly winds and smooth water.

A specimen was forwarded for the Society, and representations of it in four different points of view accompanied the communication.

Mr. Vigors called the attention of the meeting to a *Bird*, presenting a singular form among the *Tinamous*, which he had exhibited at one of the evening meetings in the year 1832, but which, from accidental circumstances, had not been characterized in the Proceedings. The birds of this group, which forms an immediate connecting link between the *Tinamous* and the *Bustards*, were first observed by Mr. Pentland on a high elevation in the Andes, and the specimen before the meeting was brought by that gentleman to this country and presented to the Society. Mr. Vigors described in detail the characters of the genus, to which he assigned the name of *Tinamotis*, and also pointed out the specific characters of the bird, to which he had on a former occasion given the name of *Pentlandii*, in honour of the distinguished traveller who first discovered the group.

#### TINAMOTIS.

*Rostrum* forte, subrectum, *Otidis* rostra persimile; culmine plano.

*Alæ* mediocres, rotundatæ; *remigibus* primâ et septimâ ferè æqualibus, brevissimis, tertiâ et quartâ longissimis.

*Pedes* tridactyli; *tarsis* sublongis fortibus; *acrotarsiis* reticulatis squamis inferioribus grandibus; *digitis* longitudine mediocribus, medio cæteris, quæ sunt ferè æquales, longiore, omnibus membranâ utrinque marginatis; *acropodiis* scutellatis, squamis maximis; *unguibus* grandibus, planis, dispansis.

*Cauda* brevis, subrotundata.

TINAMOTIS PENTLANDII. *Tin. corpore cinereo-brunneo sordidoque fulvo fasciato, capite colloque similiter striatis; crisso femoribusque rufis; mento albescente.*

Plumulæ capitis colli ventrisque magis albido, dorsi caudæque magis fulvo notatæ; narum notis maculis simulantibus. Longitudo corporis, 15; *alæ*, a carpo ad apicem remigis 3tia, 10; *rostri* ad frontem, 1½, ad rictum, 1½; *tarsi*, 2; *digitorum*, unguibus inclusis, medii, 1½, externorum, 1¼.

Mr. Vigors took the same opportunity of describing and naming No. XLV.—PROCEEDINGS OF THE ZOOLOGICAL SOCIETY.



two *Parrots* in the Society's Collection, one of which, now alive in the Menagerie, distinguished by a brilliant purple plumage over the head, nape, and breast, and which came from South America, he characterized under the name of *Psittacus augustus*; the second, of which two specimens had been procured from the late Rev. Lansdown Guilding's collection, received from the Island of St. Vincent, but the precise locality of which was not known, he described by the name of *Psittacus Guildingii*.

**PSITTACUS AUGUSTUS.** *Psitt. viridis, capite, collâ corporeque subtus splendide purpureis, sincipite viridi tincto, torque nuchali saturatiore; humeris reetricibusque coccineo notatis, his ad apices purpurascenti-fusco tinctis.*

Plumulæ nuchæ corporisque infra nigro ad apices marginatæ; interscapulii tetricumque femoris azureo leviter ad apices tinctæ. Magnitudo *Platyercii Vasa*.

**PSITTACUS GUILDINGII.** *Psitt. capitis fronte albescente, sincipite genisque flavis, occipite mentoque azureis, nuchâ viridi; alis viridibus in medio fasciâ aurantiaco-flavâ notatis, ad apices nigris; caudâ ad basin aurantiacâ, deinde fasciâ viridi in medio lazulinâ notatâ, ad apicem flavâ.*

Plumulæ occipitis ad basin flavescentes, deinde azureæ, fasciâ gracili nigro-brunnâ; nuchæ virides fasciâ latiore notatæ. Remigis primaria ad basin flavæ, secundaria aurantiacæ; ad apices nigrae; interiorum plumis externis lazulino tinctis, rhachibus nigris. Rectricis suprà ad basin flavæ, deinde aurantiaco viride marginato notatæ, postea externè lazulinæ, externè nigrae, ad apices aurantiaco-flavæ, rhachibus nigris; subtus ad basin aurantiacæ, in medio virides, ad apices flavæ. Rostrum album. Long. corp.  $17\frac{1}{2}$  unc.; alæ a carpo ad apicem remigis 4tæ, 12; tarsi,  $\frac{7}{8}$ ; caudæ, 8; mandibulæ superioris,  $1\frac{1}{2}$ ; inferioris,  $1\frac{1}{8}$ .

Mr. Gould, at the request of the Chairman, exhibited to the Meeting two tribes of *Birds*, viz. the *Tamatias*, from the warmer parts of America, and the *Coursers*, from the arid regions of Africa and India. Mr. Gould observed, that of the first group, only five species appear to have been known to Linnæus; eleven others had since been added, making sixteen: the Society's collection contained thirteen species. Mr. Gould exhibited a series of drawings in illustration of the group, and characterized one new species under the name of *Tamatia bicincta*, as follows:

**TAMATIA BICINCTA.** *Tam. guld et corpore infernè subtus ochraceo-fulvis; pectore duabus fasciis nigris transversim striato; lateribus flavido-albis nigro maculatis; plumis auricularibus griseis, marginalibus subtus brunneâ fusca tinctis; fasciâ nuchali griseâ; corpore summo caudâque supernè brunneis; tetricibus alarum secundariis ad apicem ochraceo-albis hoc colore dorso guttatâ; rectricibusque externis marginalibus.*

Long. tot. 8 unc.; rostri,  $1\frac{1}{2}$ ; alæ,  $3\frac{1}{4}$ ; caudæ, 3; tarsi,  $\frac{5}{4}$ .

Hab. Cayenne?

Mr. Gould stated in conclusion, that this formerly limited group now constitutes a considerable family, or subfamily, whose members appear naturally to form themselves into at least three or four genera: thus divided, the genus *Tamatia*, Cuv. (*Capito*, Vieill.) contains 9 species; that of *Lyppornix*, Wagl., 3 species; that of *Monasa*, Vieill., 3 species; and that of *Chelidoptera*, Gould, 1; the latter being a generic title provisionally instituted by Mr. Gould for the *Lyppornix tenebrosa*, Wagl., a species which differs in many essential characters from all the other members of the group, possessing as it does a very lengthened wing, and being in every way adapted for powerful flight. He observed, that he had consulted with M. Natterer on the propriety of separating this bird from the other members of the group, in which opinion that eminent naturalist had coincided, and at the same time stated, that it usually resorted to the topmost branches of the trees, whence it sallied forth over the forest in search after its insect food, while, on the other hand, all the other members of the group kept to low thickets and the neighbourhood of the ground. In their general economy they offer a striking resemblance to the *Shrikes* and *Fly-catchers*; they are, however, more indolent in their disposition, and sit motionless on a dead branch for hours together, until their attention is drawn to some passing insect, when they sally forth, capture it, and return to the same branch, which they are known to frequent for months together. With the exception of three or four species all the members of this group are confined to the Brazils.

Mr. Gould exhibited six species of the genus *Cursorius*, one of which was described as new by the appellation of *Cursorius rufus*.

*CURSORIUS RUFUS.* *Cur. fronte castaneo-rufo; occipite griseo, fasciâ albd cincto hac suprâ et infrâ lined angustâ nigrâ marginatâ; nucha rufescente; corpore summo rufescente brunneo; guli albidâ; pectore pallido fulvo hoc colore in faciam ventralem nigram mergente; abdomine posteriore, crissoque albis; remigibus primariis nigris; secundariis albis; pyrnno? rectricibusque caudæ ad basin brunneo-griseis harum duabus intermediis noid nigrâ apicali externis ferè albis reliquis plûs minûsve ad apicem albis nec non nigra macula griseum colorem singente; rostro nigro; digitis nigrescentibus; tarsis<sup>o</sup> albido flavis.*

Long. tot., 9 unc.; rostri, 1½; alæ, 5½; caudæ, 2; tarsi, 3.

*Hab. in insulis Oceani Indici.*

The new species of *Cursorius* was from the islands of the Indian Ocean, but from what particular locality Mr. Gould had not been able to ascertain. It differs from *Curs. Asiaticus*, by being smaller in all its proportions, by having the whole of the upper surface of a rich rufous brown, and by not possessing a white band across the rump. In its affinities it is closely allied to both *Curs. Asiaticus* and *Curs. Temminckii*.

Mr. Martin placed on the table two examples of the *Potto* or *Kinkjow* from the Society's Museum, and, at the request of the Chairman, read some notes describing the differences in colour, size,

and comparative measurements of parts in the two specimens, of which the following is an abstract.

"The differences which exist in two specimens of the *Kinkajou* in the Society's Museum have led me to introduce them to the attention of the Meeting, as it is not improbable that they may ultimately prove to be distinct species. The *Kinkajou*, however, is so rare an animal both in the museums and menageries of our country, that we want the means of ascertaining whether or not, like that allied animal the *Coati*, its colour be subject to variations of tint and marking. But independently of the great difference in colour which obtains in the two specimens before the meeting, and on which, taken as a solitary character, we should hesitate to ground a specific distinction, at least until we had compared several specimens, it appears that the ears of the rufous specimen (which was lately presented by George Vaughan, Esq.) are more elongated than those of the other, which died in the Society's Menagerie, where it had lived for many years. It is on this difference, rather than on that of colour, that I have suspected a specific distinction; though I confess my suspicions are strengthened by the latter as a concomitant. A knowledge of the precise localities from which each specimen was obtained would be of great use, but on this point, unfortunately, I have not been able to gain any information.

"In distinguishing between the two species of *Kinkajou*, I consider it best to drop entirely the specific title *caudivolvulus*, (which is applicable to both, and is descriptive rather of a generic than a specific character,) the only mode in fact by which to avoid all possibility of confusion.

"Our first species will stand as *Cercoleptes megalotus*. It is distinguished by the form of the ears, which are elongated, narrow, rounded at the tip, and somewhat flapping; their length is 1 inch 3 lines, their breadth 7 lines.

"Internally they are sparsely covered with thinly set soft hairs; externally they are fully clothed with hairs of a pale yellowish white.

"The fur is close, short, thick, and rigid; the general colour is deep reddish yellow, or fulvous, with an obscure band of a darker colour, down the top of the head, the back, and upper surface of the tail, approaching to chestnut. The sides of the body and the insides of the limbs are pale fulvous; the abdomen and throat are nearly as dark as the back, and a stripe of deep chestnut commences about the end of the sternum, and is continued to the inguinal region. The tail is slender, and the hairs of this part are very rigid.

"To our second species we propose to give the name of *Cercoleptes brachyotus*.

"The fur is full, soft, and moderately long; of a universally glossy yellowish grey clouded with brown, especially over the nose, on the top of the head, and down the back; and indeed little less so on the sides of the body and outer surface of the limbs. The abdomen, the insides of the limbs, and the throat are dusky straw colour. The ears are broad, short, and rounded; covered, but somewhat sparingly, on

the outside with fur of the same colour as that of the body: their length and breadth are equal, namely, 1 inch.

“The tail is moderately thick, being covered with fur of the same character as that of the body.”

Sp. 1. CERCOLEPTES MEGALOTUS. *Cercolept. latè rufus, strigà saturatiore, per totam longitudinem capitis, dorsi medii, caudæque suprà excurrente; lateribus pallidioribus; abdomine gulâque rufis, strigà castaneâ abdominali; auriculis longis, angustis, rotundatis subpendentibus et externè pilis pallidè flavis, indutis caudâ gracili; vellere denso brevi, atque rigido.*

Sp. 2. CERCOLEPTES BRACHYOTUS. *Cercol. vellere denso, molli, et longiusculo, griseo flavescenti, at brunneo, undato, hoc colore in capite, summoque dorso, saturatiore; abdomine et gulâ stramineis auriculis latis, mediocribus, et erectis, pilis rarioribus fuscis externè indutis.*

September 27, 1836.

Richard Owen, Esq., in the Chair.

A communication from Edward Fuller, Esq., of Carleton Hall, near Saxmundham, was read, which stated that his gamekeeper had succeeded last year in rearing two birds from a barn-door *Hen*, having a cross from the *Pheasant*, and a *Pheasant* cock; that the birds partook equally of the two species in their habits, manners, and appearance; and concluded by presenting them to the Society.

The gamekeeper of Edward Fuller, Esq., in a short note which accompanied the birds, stated that he had bred them, and they were three-quarter-bred *Pheasants*.

The living birds were exhibited at the Meeting, as was also a living hybrid, between the *Pheasant* and *common Fowl*, which was one of several that had been some years in the Menagerie of the Society.

Several specimens of hybrids, from the preserved collection in the Museum of the Society, were placed on the table for exhibition and comparison. These had been bred between the *Pheasant* and *common Fowl*, the *common Pheasant* and the *silver Pheasant*, and the *common Pheasant* with the *gold Pheasant*.

The specimens of the three-quarter-bred *Pheasants* were considered interesting, the opinion of the older physiologists having been that animals bred between parents of two distinct species were unproductive.

Mr. Yarrell stated, that although generally such an opinion prevailed there were still exceptions. The Proceedings of the Society for 1831 exhibited one already recorded at page 158. This communication was received from the Honourable Twisleton Fiennes, who having succeeded in rearing a brood between the *common Duck* and the *Pintail*, found in the following season these hybrids were productive. Other instances are also on record which were adverted to. Mr. Yarrell stated, that he had had opportunities of examining the bodies of hybrids, both of *Gallinaceous Birds* and *Ducks*, and found that the sexual organs of the males were of large size, those of the females deficient in size, and not without some appearance of imperfection. The crosses produced by the breeders of *Canaries* were mentioned, and the objects of obtaining them explained. Mr. Yarrell expressed his belief that the attempt to breed from a hybrid was most likely to be successful when a male hybrid was put to a female of a true species.

Mr. Vigors said this was the first instance that had come to his knowledge of a female hybrid being productive, and he had hitherto

considered that they were not so: he expressed his desire to see the female hybrid that had produced the three-quarter *Pheasants* then in the room, and hoped that the opportunities which the Menagerie of the Society afforded of obtaining additional evidence on this interesting subject would not be lost sight of.

The Chairman stated, that it was the opinion of John Hunter that hybrids were not productive except in cases where the generative organs were in a state of perfection, which might be regarded as unnatural in hybrids, as in the rare cases recorded of fertile *Mules*, between the *Horse* and *Ass*. Constant fertility in the hybrid proved, in the opinion of Hunter, that the parents were varieties of the same species, not distinct species. But the Chairman stated, that the experiments recorded by Hunter in the 'Animal Economy' relative to the fecundity of the hybrids from the *Dog* and *Wolf* and *Dog* and *Jackal* were incomplete, from the circumstances of the hybrids having always bred from a perfect species and not having propagated the intermediate variety *inter se*. He trusted that in a short time this test would be applied in experiments now in progress at the Society's Menagerie, and thus an additional element be gained towards the solution of this interesting question.

A small collection of *Birds* from Swan River, presented to the Society by Lieut. Breton and Capt. Brete, were on the table. Mr. Gould, at the request of the Chairman, observed upon the collection generally, and selected two species which he considered as undescribed, a *Gallinule* and a species of *Duck*, the latter strictly referrible to the genus *Oxyura* of L. Bonaparte, Prince of Musignano, (genus *Undina* of Gould). Mr. Gould named the *Gallinule*, *Gallinula ventralis*, and the *Duck*, *Oxyura Australis*, this being the only instance he had seen of this limited group from Australia. Of this species the collection contained both male and female, the latter of which, in the general distribution of its markings and colouring, bore so close a resemblance to the *Hydrobates* of Temminck that the bill alone presented the obvious distinction.

Mr. Gould characterized the *Gallinula* as follows :

**GALLINULA VENTRALIS.** *Gall. gula pectore et inferioribus corporis partibus fusco-cinereis, lateribus albo guttatis, remigibus caudæ crissoque nigris; toto corpore supernè olivaceo-brunneo; alis castaneo tinctis; mandibulâ superiore olivaceâ; inferiore ad basin rubrâ, ad apicem olivaceâ; pedibus olivaceis.*

Long. tot. 15 a 17 unc.; rostri,  $1\frac{1}{4}$ ; alæ, 9; caudæ,  $3\frac{1}{2}$ ; tarsi,  $2\frac{1}{4}$ .

Hab. in Australiâ apud flumen Cygnorum.

**OXYURA AUSTRALIS.** *Mas. Oxy. capite toto et colloque nigris; pectore, dorsolateribusque nitide castaneis; remigibus tectricibusque caudæ nigrescentibus, uropygio nigricante brunneo inornato; abdomine crissoque brunneo cinereis brunneo transversaliter obscurè striatis, rostro pedibusque plumbeis.*

Fœm. *Differt toto corpore nigricante, obscuris lineis guttisque castaneis notato; partibus inferioribus corporis pallidioribus.*

Long. tot. 15 unc.; rostri, 2; alæ, 6; caudæ, 3; tarsi, 1 $\frac{1}{2}$ .

Hab. Australia.

Hæc species typum generis constat, alis brevibus atque concavis rectricibus caudæ rigidis plumisque corporis nitidis.

October 11, 1836.

Joseph Cox Cox, Esq., in the Chair.

A series of *Mammalia* selected from the collection of the Society was exhibited. Mr. Gray made some remarks upon them illustrative of the value which he conceived was to be placed on the characters used by M. Cuvier to separate the plantigrade from the digitigrade *Carnivora*, and he concluded by stating that he did not regard the nakedness of the sole as a good character to separate the genera into larger or smaller groups, though from its permanence in all ages and the state of the species, it furnished excellent characters to distinguish species, to separate them into sections, and often to characterize the genera of carnivorous animals; and in proof of the latter, he referred to the excellent character which it furnished to distinguish the species of the genera *Herpestes*, *Mephites*, and *Lutra*. He further observed, that in many instances the extent of the nakedness of the soles appears to depend upon the temperature of the country that the animal inhabited, and mentioned that several of the animals living in countries covered with snow, which apply the whole of the soles of their feet to the ground, have this part entirely covered with hair, as the *Wolverine*, the *Panda*, the *Seals*, and the *Polar Bear*; but that this was not universally the case, for the *Benturing*, which inhabited the same country as the *Panda*, has the soles bald and papillary. He further observed, that the nakedness of the soles did not appear to be permanent even in the specimens of the same species in the *Squirrel* and other *Glirine* animals; for he had observed that the specimens of the *grey Squirrels*, in the Northern part of the United States, had this part covered with hair, whilst those of the Southern parts, had the soles entirely bald; and he also observed, that the various species of the *Spermophile* differed greatly amongst themselves in the extent of the nakedness of this part.

Mr. Gray then proceeded to make some remarks on the alteration in the situation of the teeth, and on the change which takes place in the form of the carnivorous tooth, in the milk and permanent teeth of the *Carnivora*; and stated, that the milk carnivorous tooth of the *Cat*, *Dog*, *Vison*, *Skunk*, *Viverra*, and indeed of all the genera which he had been able to examine, had a small central internal lobe, whilst the same tooth in the permanent set always had a large anterior lobe; he also stated, that he had observed that the tubercular grinders of the *Mustelæ* often vary considerably in size in the various specimens of the same species, showing that implicit reliance cannot be placed in the size of these teeth as a specific cha-

No. XLVI.—PROCEEDINGS OF THE ZOOLOGICAL SOCIETY.



acter, which several persons have been inclined to do, as it is well known that the size of such teeth does not depend upon the age of the animal, as they never alter their size after they are once completely developed. Mr. Gray then proceeded to point out the characters by which the new species exhibited were distinguished: two were said to have formed part of the collection of the late Sir Stamford Raffles, and were therefore supposed to have come from Sumatra; one of them was a new species of *Paradosaurus*, called *P. leucomystax* from its strong white whiskers, and the other Mr. Gray regarded as the type of a new genus which he called *Cynogale*, which appeared to be intermediate between *Paradosaurus* and *Ictides*, by differing from both in the length of the face, the compressed form of the false canines, and the small size and triangular form of the carnivorous grinder. Mr. Gray proposed to call it *Cynogale Bennettii*, after his late friend, who, he believed, intended to have described this animal if he had lived. Then followed the description of two *Foxes*, (*C. Magellanicus* and *C. griseus*), which formed part of the collection made by Capt. P. P. King, during his survey of the coast of South America, and a *Squirrel* (*Sciurus Douglasii*), and three *Hares*, (*Lepus longicaudatus*, *L. Californica*, and *L. Douglasii*), discovered by the late Mr. Douglas in North America. Then the description of three new species of *flying Squirrels* from various parts of continental India, viz. *Pteromys Melanotis*, *P. albiventer*, and *P. Leachii*; the latter, presented by Mr. Mellish to the Society, is peculiar for being coloured exactly like the American *Sciuroptera*, but is at once distinguished from them by the length and cylindrical form of its tail; and an *Herpestes* from the Indian Islands, like the black *Herpestes* of the Cape, but differing from it in colour and in the shortness of the tail, therefore called *H. brachyurus*. Mr. Gray then proceeded to point out the character, taken from the form of the soles of the hind feet, by which the *Skunks* could be divided into three sections or subgenera, and showed the character in the four species in the collection of the Society, and referred to some other species belonging to these sections which were in the collection of the British Museum, where also he stated other specimens of several of the species, as the *Dog*, *flying Squirrel*, and *Herpestes*, now described, were to be found.

Mr. Gould exhibited several specimens and drawings of *Birds* allied to the well-known *Wren* of Europe; and, at the request of the Chairman, proceeded to comment upon, and characterize the undescribed species as follows:

**TROGLODYTES MAGELLANICUS.** *Trog. corpore infrà griseo-fulvo, vinaceo tincto; crisso rufo, suprà brunneo; dorso scapulisque striis nigrescentibus obscurè ornatis; alis caudæque rufis, nigro striatis; mandibulâ superiore nigra, inferiore, nec non pedibus, pallidè brunneis.*

Long. tot.,  $4\frac{1}{2}$  unc.; rostri,  $\frac{1}{2}$ ; alæ, 2; caudæ, 2; tarsi,  $\frac{3}{4}$ .

*Hab.* in Fretu Magellanico.

Differt à specie *Trog. Æquinoctialis*, Swains., magnitudine majore corporis; rostro minore.

**TROGLODYTES LEUCOGASTRA.** *Trog. corporis parte superiore remigibusque caudæ brunneo-rufescentibus olivaceo tinctis; caudæ et remigibus secundariis lineis brunneis transversaliter striatis; strigæ superciliosæ, gutture, pectore, abdomineque albis; lateribus, femoribus, crurisque pallidi-brunneis; mandibulæ superiore fusca, inferiore sub-albida; pedibus brunneis.*

Long. tot.,  $2\frac{3}{4}$  unc.; rostri,  $\frac{3}{4}$ ; alæ, 2; caudæ,  $1\frac{1}{2}$ ; tarsi,  $\frac{1}{2}$ .

*Hab.* in Mexico, in loco Taumalipus dicto.

**THRYOTHORUS GUTTATUS.** *Thry. capite suprâ brunneo-rubro; strigæ superciliosæ albidæ lineis quàm minimis nigris interruptæ; dorso brunneo, plumis longitudinaliter albo striatis; alis albo et brunneo alternativè striatis; remigibus caudæ duabus intermediis brunneo-nigro guttatis, duabus propinquis nigrescentibus; marginibus externis guttis pallidæ brunneis adpersis rectricibus duabus, externis albo atque brunneo striatis; harum externæ ad apicem albo notatæ; gula et pectore griseo-albis maculis nigris guttatis; abdomine lateribusque albis guttis nigris parvis adpersis; pedibus brunneis; mandibulæ superiore gricescente, inferiore fusca.*

Long. tot.,  $6\frac{3}{4}$  unc.; rostri, 1; alæ, 3; caudæ, 3; tarsi, 1.

*Hab.* Mexico.

Mr. Gould also proposed a new genus in the group of *Wrens*, under the name of *Scytalopus*, and which he characterized as follows:

#### Genus SCYTALOPUS.

*Rostrum* capite brevius, compressum, obtusum leviter recurvum.

*Nares* basales, membranâ tectæ.

*Alæ* concavæ, breves, rotundatæ, remige primâ abbreviatâ, tertiâ, quartâ, quintâ et sextâ æqualibus.

*Cauda* brevis, rotundata, (pennis externis brevissimis,) laxâ.

*Tarsi* elongati, atque robusti, antrosum scutellis tecti; posterius fasciis angustis cincti, squamis serpentum abdominalibus, haud dissimilibus; halluce elongato et robusto; ungue elongato; digitum anteriorum, medio elongato et gracili.

**SCYTALOPUS FUSCUS.** *Scy. corpore toto fuliginoso-nigro; capitis plumis nonnunquam argentato-griseis; rostro nigro; pedibus brunneis.*

Long. tot.,  $2\frac{3}{4}$  unc.; rostri,  $\frac{1}{2}$ ; alæ,  $1\frac{1}{2}$ ; caudæ,  $1\frac{1}{2}$ ; tarsi,  $\frac{3}{4}$ .

*Hab.* in Fretu Magellanico, Chili, &c.

Hoc genus ad illud in quo *Troglodytes* veræ amplectuntur maximam affinitatem demonstrat.

SCYTALOPUS ALBOGULARIS. *Scy.* capite cæruleo-nigro; corpore superiore ferrugineo-brunneo, lineâ transversali nigra; caudâ pallidâ rufo-brunnea; gula, pectore, abdomineque intermedio albis, lateribus et crisso pallido ferrugineis lineâ transversali nigra; mandibula superiore nigra brunnea; pedibus brunneis.

Long. tot.,  $3\frac{3}{4}$  unc.; rostri,  $\frac{5}{8}$ ; alæ,  $1\frac{3}{4}$ ; caudæ,  $1\frac{1}{2}$ ; tarsi,  $\frac{7}{8}$ .

Hab. in Brasiliâ.

October 25, 1836.

Dr. Bostock in the Chair.

Two skulls of the *Orang-Utan* of Borneo, and a skin, including the *cranium*, of an immature *Orang-Utan* of Sumatra, were exhibited. They were transmitted to England by Dr. W. Montgomerie of Singapore, with a statement that the young Sumatran *Orang* had died in that gentleman's possession soon after having acquired additional grinders.

Mr. Owen availed himself of the occasion to make the following observations on each of the above specimens.

He stated that the skin of the young Sumatran *Orang* agreed in the rufous colour, texture, disposition, and direction of the hair, with the adult female Sumatran *Orang*, presented to the Zoological Society by Sir Stamford Raffles; like that specimen also, it had no nail on the *hallux* or thumb of the hinder hands. The posterior *molars* on each side of each jaw correspond to the first permanent *molars* of the adult; the rest of the teeth consisted of the 8 deciduous *bicuspid*es, the 4 small deciduous *canini*, and the 8 deciduous *incisores*. This state of the dentition was similar to that of the human child at the 7th year; but it would be unsafe to infer from this circumstance that the age of the *Orang* corresponded: it being more probable, from the characteristic duration of the immature state in the human species, that the shedding of the teeth takes place at a later period than in the *Orang*.

Of the two *crania* of the Bornean *Orangs*, one differed materially from the other in size and in the development of the cranial ridges. The larger specimen before the Society, closely resembled the *cranium* of the Bornean *Pongo* or adult *Orang* in the Museum of the College of Surgeons, and differed, in precisely the same respects as that specimen, from the *cranium* of the *Pongo* (supposed to be Sumatran) in the possession of Mr. Cross, described and figured in the 1st volume of the Society's Transactions, (p. 380. Pl. 53), which induced Mr. Owen to entertain more strongly his original suspicion, that that *cranium* belonged to an *Orang* specifically distinct from the great Bornean species (*Simia Wurmii*, Fischer). With respect to the differences alluded to, he stated that the *cranium* of the great Bornean *Orang* was characterized by the more oblique plane of the orbits, and consequently the straightness of the contour of the skull between the forehead or *glabella* and the incisor teeth; the external boundaries of the orbit were broad and had a rough irregular surface, probably in consequence of the development of the callous protuberances which characterize the sides of the face in the adult males of this species. The *symphysis* of the lower jaw was also proportionally deeper than in the (supposed) Sumatran *Pongo*. The *cranium*

of that animal in the possession of Mr. Cross, Mr. Owen regarded as being that of a male individual from its size and from the development of the cranial ridges.

The sexual peculiarities observable in the *cranium* of both the Bornean and Sumatran *Pongos* are well marked, and are exemplified, first in a difference of relative size, that of the female being about  $\frac{1}{2}$ th smaller; secondly, in a much smaller development of the cranial ridges; and thirdly, in the *symphysis menti* being of less depth, the *cranium* of the female approaching in these respects, according to the usual law of sexual development, towards the characters of the immature animal. The smaller of the *crania* of the two Bornean Orangs, Mr. Owen regarded as indicative of a species of *Simia*, Erxl., equally distinct from the great *Pongo* of Borneo (*Simia Wurmii*, Fischer, Synopsis Mammalium, p. 32, No. 43), and from the *Orang* of Sumatra (*Simia Abelii*, Fischer, *ibid.* p. 10, No. 2<sup>e</sup>); and whilst regretting that his conclusion as to the specific distinction of the smaller *Orang*, (which, *ceteris paribus*, must be at least one third less than either of the two preceding *Orangs*) necessarily reposed on a comparison of the *cranium* alone, he at the same time observed that, as the *cranium* in question was in every respect entire, and with the series of teeth complete, it served to establish that deduction on the sound basis of dental and osteological characters.

Mr. Owen therefore proposed to designate the lesser *Orang* of Borneo, *Simia Morio*, and proceeded to describe the *cranium* as follows:

"The size and form of the *cranium* of the *Simia Morio* at first suggests the idea of its being an intermediate stage of growth between the young and adult *Simia Satyrus*, or *Pongo*; but this is disproved by comparison of the teeth of *S. Morio*, with the permanent teeth in the adult *Pongo*, and with the deciduous ones in the young *Simia Satyrus*, as well as with the germs of the permanent teeth concealed in the jaws of the latter. For while the teeth of *S. Morio* are much larger than the deciduous teeth of the young *S. Satyrus*, they have different relative sizes one to another from those which are observed in the permanent teeth of the full-grown: the *molars* and *bicuspides* of the *S. Morio* being smaller, the *canini* much smaller, while the upper *incisores* have nearly, and the lower *incisores* fully, the same dimensions as those of the great *Pongo*.

"The teeth in the jaws of a quadrumanous *cranium* may be known to belong to the permanent series, by the absence of the *foramina*, which, in an immature *cranium*, are situated behind the deciduous teeth, and which lead to the cavities containing the crowns of the permanent teeth. This character is very conspicuous on comparing the *cranium* of *Simia Morio* with that of a young *Simia Satyrus*, in which the deciduous series are present, together with the first permanent *molars*. The deciduous teeth in the young *Orang*, besides their smaller size, are more or less protruded from their sockets, and thrust apart from one another by the *vis à tertio* of their huge successors, while the teeth of *S. Morio* are lodged firmly in the jaws; and, with the exception of the characteristic interval between the

canines and incisors, are compactly arranged in close contiguity with each other.

"I have re-examined with much interest several *crania* of immature *Orangs*, in order to ascertain if any of these might be the young of the species in question; but they have all presented the crowns of the permanent *molars* of too large a size,—of a size which shows that the great *Pongo*, either of *Wurm* or *Abel*, represents their adult state\*. And these immature *crania* also indicate the condition to which they are destined to attain by the size of the orbits, which exceeds that of the orbits of the *S. Morio*, the eye having, like the brain, already in the young *Pongos* acquired its full size.

"That the *cranium* of the *Simia Morio* here described, belonged to an adult is proved by the small interval between the temporal ridges at the crown of the skull, corresponding to the extensive surface of origin of the *crotophyte muscles*; and by the obliteration of the intermaxillary sutures: that it belonged also to an aged individual is highly probable from the extent to which the teeth are worn down, and from the obliteration, notwithstanding the absence of interparietal and lambdoidal crests, of the sagittal and lambdoidal sutures.

"The cerebral portion of the skull of *Simia Morio* equals in size that of the *Pongo*, and indicates the possession of a brain at least as fully developed as in that species, while the maxillary portion is proportionally smaller; so that, as the *cranium* rises above the orbits, and is, like that of the *Pongo*, more convex on the coronal aspect than in the *Chimpanzee*, and wants the prominent supraciliary ridge which characterizes the African *Orang*, it presents in the *Simia Morio* altogether a more anthropoid character.

"There are, however, the rudiments of the ridges which so remarkably characterize the *cranium* of the mature *Pongo*. Those which commence at the external angle of the frontal bone pass backwards, upwards, and slightly converge, but do not meet; they gradually diminish in breadth, and, after passing the coronal suture, subside to the level of the skull; they are then only traceable by a rough line, which leading parallel to the sagittal suture, and gradually bending outwards, rises again to be continued into the lam-

\* The permanent teeth in the Bornean and Sumatran *Pongos* so closely correspond in size and shape that I am unable to refer the *crania* of the immature *Orangs* which I have hitherto examined to either species exclusively from comparison of the crowns of the concealed permanent teeth; in speaking of the immature specimens of the great *Pongo*, I therefore use the term *Simia Satyrus*; in comparing the *Simia Morio* with the adult *Pongo*, I would be understood as always referring to the Bornean species, with cheek-callosities, or the *Simia Wurmii* of Fischer. If the specific differences of *Simia Wurmii* and *Simia Abelii* be admitted, the term *Simia Satyrus* must merge into a synonym, as having been applied indiscriminately to the young of both these large *Orangs*. In each case, the generic term *Simia* is applied in the restricted sense in which it is used by Erxleben in his 'Systema Regni Animalis,' 8vo, 1777, and with which the term *Pithecius*, substituted by Geoffroy for the genus of *Orangs*, is synonymous.

lambdoidal ridges; thus circumscribing the origins of the temporal muscles. The lambdoidal and mastoid ridges are broader and more developed than in the *Chimpanzee*, but inferior in both respects to those of the *Pongo*. The nuchal region of the *occiput* is almost smooth, and is convex, without the mesial ridge, and strong muscular impressions observable in the *Pongo*, where a preponderating weight in front calls for the insertion of powerful muscles behind to counterbalance it.

The temporal bones join the frontal in *Simia Morio* as in the *Troglodytes niger*; but this structure occasionally is present on one or both sides of the skull in *Simia Satyrus*.

The *additamentum suture lambdoidalis* is present on both sides in the *S. Morio*, and the beginning of the lambdoidal suture may be faintly traced, but the remainder is obliterated.

Directing our attention to the base of the skull of *S. Morio* we observe the occipital *foramen* to be less posteriorly situated than in the *Pongo*, but more so than in the *Chimpanzee*. The plane of the *foramen* is also less oblique than in the *Pongo*. The occipital condyles are as far apart anteriorly as in the *Chimpanzee*. The anterior condyloid *foramina* are double on each side as in the *Pongo*: the carotid and jugular *foramina* open within the same depression; they are relatively further apart in the *Chimpanzee*: the petrous portion of the temporal bone, as in the *Pongo*, is relatively smaller than in the *Chimpanzee*, and the articular cavity, or surface for the lower jaw, forms a larger proportion of the base of the skull.

The other characters of the *basis cranii* correspond with those of the *Pongo*; and the smaller size of the *meatus auditorius lateralis* is probably associated in both species with a smaller auricle, as compared with the *Chimpanzee*.

On the bony palate the relative position of the *foramen incisivum* corresponds with the development of the incisive teeth, showing the intermaxillary bones to be of larger size in the *S. Morio* than in the *Chimpanzee*: the situation of the sutures joining these bones to the maxillaries is indicated by vascular grooves, but otherwise obliterated; while in the *cranium* of a young *Pongo* of nearly the same size as that of the *Simia Morio*, the intermaxillary sutures still remain, corresponding to the non-development of the permanent canines. It will be interesting to determine at what period these sutures are obliterated in the more anthropoid *Simia Morio*.

The *os nasi* is a single narrow long triangular bone, slightly dilated at its upper end or apex, with the basal margin entire, presenting no indications of original separation into two parts, as has been observed in skulls of the *Chimpanzee*.

In the contraction of the interorbital space, and the general form of the orbit and its boundaries, the *Simia Morio* resembles the *Simia Satyrus*, but the orbital cavity, as before observed, is smaller. In the plane of the orbit and straight contour of the upper jaw, the *Simia Morio* resembles the Bornean species of *Pongo* or *Simia Urmibii*, rather than the *Simia Abellii* or Sumatran *Pongo*.

The orbital process of the *os mala* is perforated in the *S. Morio*

as in the *Pongo*, by several large *foramina*. There is one principal and two very small infraorbital *foramina* on either side; the upper maxillary bones are relatively smaller, as compared with the other bones of the face, and especially the intermaxillaries, than in the *Pongo*; a structure which coincides with the smaller proportional development of the canine teeth. The nasal aperture has the same form as in the adult *Simia Wurmii*, being more elongated than in the immature *Orang*.

The main and characteristic difference then between the *Simia Morio* and the *Pongo*, whether of Borneo or Sumatra, obtains in the size of the laniary or canine teeth, to the smaller development of which in the *S. Morio*, almost all the other differences in the *cranium* are subordinate or consequent. The laniary teeth, it may be observed, have little relation to the kind of food habitual to the *Orangs*; had they been so related they would have been accompanied with a structure of the glenoid cavity fitting them, as in the true *Carnivora*, to retain a living prey in their gripe, till its life was extinguished or resistance effectually quelled. But the flattened surfaces on which the condyles of the lower jaw rotate are in subserviency to the flattened tuberculate molars, showing the mastication of vegetable substances to be the habitual business of the jaws, and the application of the laniaries to be occasional, and probably defensive in most cases. We perceive the utility of formidable canine teeth to the *Orangs*, whose stature makes them conspicuous and of easy detection to a carnivorous enemy; such weapons, in connexion with the general muscular strength of the *Pongos*, enable them to offer a successful defence against the *Leopard*, and may render them formidable opponents even to the *Tiger*; but in the smaller species, which we have been describing, to which concealment would be easier, the canines are of relatively smaller size, and those of the lower jaw are so placed as to be worn down by the lateral incisors of the upper jaw; they were reduced in the specimen described, to the level of the other teeth; and the points of the upper canines were also much worn. The size, forms, and proportions of the teeth which relate more immediately to the food of the *Orangs*, viz. the molars and incisors, show indisputably that the *Simia Morio* derives its sustenance from the same kind of food as the larger *Orangs*. The singular thickness or antero-posterior diameter of the incisors, which are worn down to a flattened surface, like molar teeth, show that they are put to rough work; and it is probable that their common use is to tear and scrape away the tough fibrous outer covering of the cocoa-nut, and, perhaps, to gnaw through the denser shell.

With respect to minor differences not noticed in the description, these may be deduced from the subjoined table of comparative measurements.



Table of Admeasurements.

	Simia Moro, adult.		Simia Nasutus, adult male.	
	inch.	lin.	inch.	lin.
Length of the skull from the <i>vertex</i> to the base of the occipital condyle.....	3	7	4	6
Length of the skull from the posterior plane of the <i>occiput</i> to the margin of the incisors ....	7	10	10	6
Length of the skull from the posterior plane of the <i>occiput</i> to the fronto-nasal suture .....	4	4	5	3
Length of the skull from the fronto-nasal suture to the margin of the incisors.....	1	1½	5	7
Greatest lateral diameter of the skull (at the post-auditory ridges).....	4	8	5	4
Smallest lateral diameter of the skull (behind the orbits).....	2	4	2	9
Distance between temporal ridges.....	0	7	0	0
Diameter of the skull at the <i>zygomata</i> .....	5	1	6	9
Length of the zygomatic <i>fossa</i> .....	1	9	2	6
Diameter of skull taken between the outsides of the orbits .....	3	6	4	6
Interorbital space .....	0	4	0	7
Transverse diameter of orbital cavity .....	1	3	1	6
Vertical diameter of orbital cavity .....	1	6	1	7
Vertical diameter of nasal aperture .....	1	1	1	6
Transverse diameter of nasal aperture .....	0	9	1	0
Interspace between infraorbital <i>foramina</i> .....	1	7	2	0
Distance between the inferior margin of the nasal bone and the inferior margin of the intermaxillary bone .....	2	5	3	3
From the anterior margin of the occipital <i>foramen</i> to the posterior margin of the bony palate....	2	3	2	10
Length of the bony palate along the mesial suture.	3	1½	4	0
From the anterior margin of the intermaxillary bones to the anterior palatal <i>foramina</i> .....	0	10	1	3
Breadth of the crown of the first incisor, upper jaw.	0	6	0	7
Breadth of the crown of the second incisor, upper jaw .....	0	3½	0	4
Breadth of the four incisors, <i>in situ</i> , upper jaw....	1	6	1	9
Longitudinal extent of grinding surface of the <i>molars</i> , <i>bicuspides</i> included, of one side, upper jaw .....	2	2	2	5
Length of the enamelled crown of the canine tooth, upper jaw.....	0	6½	1	0
Breadth of ditto .....	0	5	0	9
Length of the lower jaw from the condyle to the anterior surface of the sockets of the incisors. }	5	7	7	4
Length of the <i>ramus</i> of the lower jaw .....	3	4	4	7½
Greatest breadth of ditto .....	2	0	3	1
Interspace between the mental <i>foramina</i> .....	1	8	2	1

Mr. H. E. Strickland read the following list of *Birds* noticed or obtained by him in Asia Minor, in the winter of 1835 and spring of 1836.

He stated that the winter of last year was one of unusual severity in all parts of Europe. At Smyrna, where he resided from November to February, the weather, which had been mild in the early part of December, underwent a sudden change about Christmas-day. A north wind and violent storms of snow brought vast flocks of northern *Birds* to take shelter in Smyrna Bay. A frost of more than three weeks followed, a circumstance almost without parallel at Smyrna, which is situated close to the sea and in the low latitude of  $38\frac{1}{2}^{\circ}$ . This statement will explain the occurrence in the following list, of many *Birds* whose usual abode is in high northern latitudes.

In the month of February he visited Constantinople, and returned overland to Smyrna, which he reached at the end of April. A great change had now taken place in the ornithology of that neighbourhood. The spring was now at its height, and numerous summer birds had arrived, of a more exotic race than those which had been observed during the winter. Mr. Strickland was now, however, compelled to return to Europe; but the few days which passed before he left Smyrna, served to give him a taste of the rich ornithological harvest which might be reaped by a summer's residence in Asia Minor.

Of those species in the following list which have an asterisk attached, specimens had been obtained by Mr. Strickland and were exhibited.

"*Vultur*, Ill. }  
*Aquila*, Briss. }

Two or three species of each of these families frequent the neighbourhood of Smyrna, but all my endeavours to procure specimens of these wary birds were unavailing.

- 1/1 \*1. *Falco Aesalon*, Linn. Smyrna; rare.
- 1/1 \*2. *Falco Tinnunculus*, Linn. Smyrna; rare.
- 1/1 \*3. *Falco tinnunculoides*, Temm. Very abundant in Asia Minor during the spring. It frequents the Turkish villages, and builds in the roofs of the houses. Its mode of hovering is similar to that of the common Kestrel, but it is more gregarious in its habits than that bird.
- 1/1 \*4. *Accipiter Fringillaria*, Ray. Smyrna.
- 1/1 \*5. *Buteo vulgaris*, Bechst. Smyrna.
- 1/1 \*6. *Circus cyaneus*, Flem. Smyrna.
- 1/1 \*7. *Circus rufus*, Briss. Smyrna.
- 1/1 + 8. *Otus brachyotus*, Cuv. Smyrna.
- 1/1 + \*9. *Uluia Stridula*, Selby. Smyrna.
- 1/1 + \*10. *Bubo maximus*, Sibb. Smyrna.
- 1/1 + \*11. *Noctua nudipes*, Nilss. Very common in the Levant.
- \*12. *Lanius minor*, Linn. Smyrna, in April.
- \*13. *Lanius rufus*, Briss. Smyrna, in April.
- \*14. *Lanius Collurio*, Linn. Smyrna, in April.
- 15. *Turdus Merula*, Linn. Smyrna.
- 16. *Turdus solitarius*, Linn. Frequents the rocks and hills near Smyrna.

17. *Turdus viscivorus*, Linn. Smyrna, during the winter.
18. *Turdus pilaris*, Linn. Smyrna, during the winter.
19. *Turdus musicus*, Linn. Smyrna, during the winter.
20. *Turdus iliacus*, Linn. Smyrna, during the winter.
21. *Cinclus aquaticus*, Bechst. Rivulets near Smyrna. I cite this bird with some doubt, not having been able to obtain a specimen. It is possible that the Smyrna *Cinclus* may be the *C. Pallasii*, Temm., though I am inclined to refer it to the former species.
- \*22. *Oriolus Galbula*, Linn. Smyrna, April.
- \*23. *Saxicola Rubicola*, Bechst. Winters at Smyrna.
- \*24. *Saxicola aurita*, Temm. Arrives at Smyrna in April. Its habits are similar to those of our *Wheatear*, and from its shy and restless motions it is very difficult to procure.
- \*25. *Saxicola Œnanthe*, Bechst. Smyrna, in April.
26. *Saxicola Rubetra*, Bechst. Common at Smyrna during the winter.
27. *Phœnicura suecica*, Selby. I believe that I saw this bird near Smyrna in April.
- \*28. *Phœnicura Tithys*, Jard. and Selb. This bird is common on the bare rocky hills near Smyrna, where it remains during the winter.
29. *Philomela luscinia*, Swains. First heard on the 5th of April at Hushak in the interior.
30. *Salicaria phragmitis*, Selby. Seen at Smyrna in December.
31. *Curruca cinerea*, Bechst. Smyrna, April.
- \*32. *Curruca melanocephala*, Bechst. This delicate little bird, which is only found in the most southern parts of Europe, remains through the winter in the neighbourhood of Smyrna. It is a retired solitary bird, frequenting sheltered ravines thickly beset with various ever-green shrubs.
- \*33. *Sylvia rufa*, Temm. Shot near Smyrna in November.
- \*34. *Sylvia brevirostris*, mihi. Also killed in November near Smyrna. This species, which I believe to be new, may be thus characterized:

*SYLVIA BREVIROSTRIS. Sylv. corpore suprè olivaceo brunneo, subtus albedo; pedibus nigris.*

Plumage closely resembling that of *S. Trochilus*. Above brown with a tinge of olive. A pale yellow streak over the eye. Throat and breast pale fulvous with a slight tinge of yellow; belly whitish. Inner wing-coverts of a pale yellow. *Remiges*: the 4th and 5th longest and equal: the 2nd equal to the 8th. Beak dusky; legs black.

Long. tot. poll.  $4\frac{1}{2}$ ; *rostri*,  $\frac{1}{2}$ ; *caudæ*,  $2\frac{1}{8}$ ; *alæ*,  $2\frac{3}{8}$ ; *tarsi*,  $\frac{3}{4}$ .

Differs from *S. rufa* in its greater size, and from *S. Trochilus* in the shortness of the beak, and the dark colour of the legs.

Habitat prope Smyrnam. Hyeme occisa.

\*35. *Accentor modularis*, Cuv. Killed near Smyrna in the winter, but is rare.

\*36. *Regulus ignicapillus*, Cuv. Frequents the olive groves near Smyrna.

\*37. *Troglodytes europæus*, Linn. Common near Smyrna. Undistinguishable from English specimens.

38. *Motacilla alba*, Linn. Smyrna.
39. *Motacilla boarula*, Linn. Smyrna.
- \*40. *Anthus pratensis*, Bechst. Common at Smyrna.
- \*41. *Anthus aequalicus*, Bechst. Killed on the coast near Smyrna.
42. *Hirundo rustica*, Linn. I believe that all the British species of *Hirundinidae* frequent the Levant, but have only ascertained the above species.
- \*43. *Alauda arvensis*, Linn. Immense flocks of this bird arrived from the northward at the commencement of the severe weather at Christmas.
- \*44. *Alauda cristata*, Linn. Very common.
- \*45. *Alauda arborea*, Linn. Smyrna; common.
- \*46. *Alauda calandra*, Linn. Arrived during the cold weather.
- \*47. *Parus major*, Linn. Smyrna.
- \*48. *Parus caeruleus*, Linn. Smyrna.
- \*49. *Parus lugubris*, Natt. Smyrna.
- \*50. *Emberiza miliaria*, Linn. Common.
- \*51. *Emberiza Cia*, Linn. Frequents the rocky hills near Smyrna.
- \*52. *Emberiza Cirlus*, Linn. Haunts the vicinity of streams. It seems to replace the *E. citrinella*, which I never noticed in Asia Minor.
- \*53. *Emberiza palustris*, Sav. The habits of this species of *Reed Bunting* exactly resemble those of *E. Schanickus*. The beak is rather less gibbous than in the Dalmatian specimens.
- \*54. *Emberiza casia*, Cretzsch. Killed at Smyrna in April. It is frequent in Greece and in the Ionian Islands.
- \*55. *Emberiza hortulana*, Linn. Smyrna, April.
- \*56. *Emberiza cinerea*, mihi. This new species is thus characterized:
- EMBERIZA CINEREA. *Emb. capite viridi-flavescente; corpore supra cinerascenti, subtus albo.*
- Male. Crown of the head greenish yellow, becoming cinereous at the nape. Back cinereo-fuscous with an obscure streak of brown in the middle of each feather. Rump cinereous; tail dark brown; the two lateral pairs of feathers white on the inner webs for near half their length towards the extremities.
- Wings dark brown, the coverts and quills margined with whitish, the scapulars with fulvous. Chin and throat yellow, becoming greenish on the cheeks.
- Breast cinereous; abdomen white, sides cinereous.
- Bill dusky; legs flesh-coloured.
- Long. tot. poll. 6; rostri,  $\frac{2}{3}$ ; ala,  $3\frac{1}{2}$ ; cauda,  $2\frac{3}{4}$ ; tarsi,  $\frac{3}{4}$ .
- The beak of this species most nearly resembles that of *Emberiza Cia*.
- Habitat in collibus juxta Smyrnam. Mense Aprili occisa.
57. *Pyrgita domestica*, Cuv. This is the common house Sparrow of the Levant.
- \*58. *Pyrgita hispaniolensis*, Cuv. A single specimen was obtained in April at Smyrna.
- \*59. *Linaria cannabina*, Swains. Common.
60. *Carduelis elegans*, Steph. Common.

\*61. *Fringilla Cœlebs*, Linn. Very common in the Levant.

\*62. *Fringilla Montifringilla*, Linn. Occurred during the winter.

\*63. *Fringilla Serinus*, Linn. Gregarious during the winter. Assembles in large flocks, which chirp incessantly in a small low note.

\*64. *Coccothraustes Chlois*, Flem. Common.

\*65. *Sturnus vulgaris*, Linn. Smyrna.

\*66. *Corvus Corax*, Linn. Smyrna.

\*67. *Corvus Cornix*, Linn. Common near Smyrna.

\*68. *Corvus Monedula*, Linn. Common near Smyrna.

Obs. The common Rook was not noticed, and I do not believe that it exists in the country.

\*69. *Pica caudata*, Ray. Common in the Levant.

\*70. *Garrulus melanocephalus*, Bonelli. This bird was first described by M. Gené in the Memoirs of the Academy of Turin, vol. xxxvii. p. 298, Pl. I., from specimens in the Turin Museum, received from Lebanon. It is common in the vicinity of Smyrna, and its note and habits are identical with those of the European Jay, whose place it supplies.

\*71. *Sitta syriaca*, Ehrenb. Frequents the open hills near Smyrna, where it is seen climbing up the masses of rock, or perched on their summits. It never is seen on trees. The note is a loud clear warble.

\*72. *Sitta europæa*, Linn. Inhabits the groves of aged olive trees which abound in the bottoms of the valleys. The specimens are smaller than British ones, but not otherwise distinguishable.

\*73. *Upupa Epops*, Linn. Seen at Hushak in April.

\*74. *Alcedo ispida*, Linn. Common.

\*75. *Alcedo rudis*, Linn. This bird may often be seen in the salt-water marshes west of Smyrna. It never seems to follow the rivers, but always remains near the coast. It sometimes hovers for several minutes, about 10 feet above the water, and then drops perpendicularly on to its prey.

\*76. *Picus martius*, Linn. I saw a specimen of this bird in the possession of Mr. Zohrab at Broussa. It was shot in the pine forests of Mount Olympus.

\*77. *Picus major*, Linn. Common near Smyrna.

\*78. *Cuculus canorus*, Linn. Smyrna, in April.

\*79. *Phasianus colchicus*, Linn. Common near Constantinople on both sides of the Bosphorus. It has probably migrated thither spontaneously from Colchis, its native country.

\*80. *Francolinus vulgaris*. Occurs in the marshes of the Hermus and the Cayster, whence it is sometimes brought to market at Smyrna.

\*81. *Perdix saxatilis*, Meyer. Abundant on the hills round Smyrna.

\*82. *Coturnix dactylisonans*. Remains near Smyrna during winter.

\*83. *Columba Palumbus*, Linn. Smyrna.

\*84. *Columba Ænas*, Linn. Smyrna.

\*85. *Columba Turtur*, Linn. Smyrna, in April.

\*86. *Columba cambayensis*, Lath. This bird inhabits the Turkish burial-grounds at Smyrna and Constantinople, which are dense forests of cypress trees. It is strictly protected by the Turks, and it was

with some difficulty that I obtained a specimen. It was, perhaps, originally introduced by man, but now seems completely naturalized.

87. *Otis tarda*, Linn. Frequents the plains south of Smyrna. It is called *wild Turkey* by the European residents.

\*88. *Otis tetrax*, Linn. Abundant during the winter in the poultry shops at Smyrna.

89. *Ædicnemus crepitans*, Temm. Said to occur in this part of Asia Minor.

90. *Vanellus cristatus*, Meyer. Appeared in vast flocks at the commencement of the cold weather.

91. *Grus cinerea*, Bechst. A flock seen in the plain of Sardis the end of April.

\*92. *Ardea Egretta*, Linn. Frequents the sea marshes west of Smyrna.

\*93. *Botaurus stellaris*, Steph. Smyrna.

\*94. *Ciconia alba*, Bellon. Very abundant in Turkey during summer. It swarms in every village, and is protected with the same strictness by the Turks as by the Dutch. It is said to have quite deserted Greece, since the expulsion of its Mahometan protectors.

95. *Numenius arquatus*, Cuv. Smyrna.

96. *Scolopax Rusticola*, Linn. So abundant were *Woodcocks* at Smyrna during the severe weather, that many were killed in small gardens in the midst of the town.

97. *Scolopax Gallinago*, Linn. } Abundant in the marshes near

98. *Scolopax Gallinula*, Linn. } Smyrna.

\*99. *Tringa variabilis*, Meyer. Common on the coast.

\*100. *Tringa Temminckii*, Leisl. Smyrna, in winter.

\*101. *Totanus Glottis*, Bechst. Smyrna, in winter; rare.

102. *Totanus Calidris*, Bechst. Common in the marshes.

103. *Totanus ochropus*, Temm. Seen on the coast.

\*104. *Recurvirostra Avocetta*, Linn. Smyrna; rare.

\*105. *Rallus aquaticus*, Linn. Smyrna.

106. *Crex pratensis*, Bechst. Smyrna, in winter.

\*107. *Crex porzana*, Bechst. Smyrna, in winter.

108. *Gallinula Chloropus*, Lath. Smyrna, in winter.

109. *Fulica atra*, Linn. Smyrna in winter.

\*110. *Glareola torquata*, Meyer. A pair of these birds were brought to me at Smyrna in April.

\*111. *Podiceps cristatus*, Lath. The young of this bird is abundant in the harbour at Constantinople, where, in common with all other waterfowl, it is strictly protected.

\*112. *Puffinus Anglorum*, Ray. Flocks of this bird are constantly seen flying up and down the Bosphorus. They are rarely seen to alight, and from their unceasing restlessness, the Franks of Pera have given them the name of *imes damnées*. I am not aware that this bird has before been noticed in the southern parts of Europe.

\*113. *Larus ridibundus*, Linn.

\*114. *Larus argentatus*, Brunn. These two species of *Gull* frequent the Golden Horn at Constantinople, where they are so tame that they may easily be struck with an oar.

115. *Pelecanus Onocrotalus*, Linn. Frequents the marshes near Smyrna, where it remains during the winter.

\*116. *Phalacrocorax Carbo*, Briss. Abounds in the harbour of Constantinople, and roosts on the roofs of the houses.

\*117. *Phalacrocorax pygmaeus*, Briss. Shot near Smyrna in winter.

118. *Cygnus Olor*, Linn. Visited Smyrna Bay in the winter.

119. *Clangula vulgaris*, Leach. Smyrna, during the winter.

120. *Fuligula ferina*, Steph. Smyrna, during the winter.

121. *Fuligula cristata*, Steph. Smyrna, during the winter.

\*122. *Rhynchapsis clypeata*, Shaw. Smyrna, during the winter.

123. *Tadorna Vulpanser*, Flem. Smyrna, during the winter.

124. *Querquedula acuta*, Selby. Smyrna, during the winter.

125. *Anas Boschas*, Linn. Smyrna, during the winter.

126. *Mareca Penelope*, Selby. Smyrna, during the winter.

127. *Tadorna Rutila*, Steph. Frequent in the poultry shops at Smyrna, but owing to the Turkish practice of cutting the throats of birds as soon as shot, I was unable to obtain a perfect specimen.

128. *Querquedula Crecca*, Steph. Smyrna, in the winter.

\*129. *Mergus albellus*, Linn. Smyrna, in the winter."

Mr. Strickland also exhibited the skin of a variety of the common *Fox*, *Canis Vulpes*, Linn., which occurs near Smyrna: together with a specimen of the *Lepus hybridus*, Pall., from the South of Russia, purchased of a furrier at Rome.

Also a specimen of an *Argonauta*, Linn., which was brought to him in Cephalonia with the animal alive in it. Mr. Strickland stated that he kept it for some hours alive, and when dead it fell out of the shell with its own weight; proving that there is no muscular connexion between the animal and the shell. In this instance the shell did not contain any ova.

Mr. Ogilby called the attention of the Society to two *Antelopes* at present living in the Gardens, which he regarded as the *Koba* and *Kob* of Buffon. He expressed his pleasure at having it in his power to identify two animals originally described imperfectly, and of which the zoological characters have been hitherto almost unknown; observing that the re-discovery of an old species was at all times more gratifying to him, and, he considered, more beneficial to the science of zoology, than the original description of twenty that were new; because, whilst it equally added an authentic species to the substantive amount of our knowledge, it had the further merit of dispelling the many doubts and surmises which unavoidably obscured the subject. Mr. Ogilby entered at some length into the identification of these two interesting species, referring to the scanty materials afforded by the original descriptions of Buffon and Daubenton, and pointing out the various other *Ruminants* with which subsequent naturalists had confounded them; at the same time reserving his more detailed demonstration of this subject, and his descriptions of the animals themselves, for the monograph which he has been long preparing for the Transactions of the Society. Among other errors, he pointed out that the *Koba* of Pennant (*A. Senegalensis*) was the *Caama*;

and that the *Korrigum* of Denham and Clapperton's Travels, identified with *A. Senegalensis* by Mr. Children and Colonel Smith, was a very distinct animal from the *Koba*, and even belonged to a different natural genus. It has horns in the female sex and lachrymal sinuses, both of which characters are absent in the *Koba*: he therefore proposed to distinguish the Bornou animal by the specific name of *A. Korrigum*. The same observation applies to the two species which Colonel H. Smith has described under the names of *A. Adenota* and *A. Forfex*, and which he identified with the *Kob* and *Gambian Antelope* respectively; both these animals had lachrymal sinuses, whereas, both Buffon and the more accurate Daubenton, expressly declare that the *Kob* is without this character. The animals in the Gardens, however, corresponded in all respects with the original descriptions; their comparative size, their colour, their habitat, their zoological characters, as far as they were reported, and, in the case of the *Koba*, even the name, were identical; and it therefore gave him peculiar satisfaction to be able to congratulate the Society on the possession of two of the rarest and most interesting *Antelopes* ever brought together. He observed, in conclusion, that the female of the *Kob* had been observed by him six or eight months ago in the Surrey Zoological Gardens, but that he had only recognised its identity with Buffon's animal on the arrival of the fine male specimen at present belonging to the Society.

Mr. Ogilby afterwards exhibited the skin of a *Fox* from the Himalayan mountains, which he has described in the Zoological Part of Mr. Royle's "*Flora Himalaica*," under the name of *Canis Himalaicus*. This animal, of which Mr. Ogilby stated that he had examined three skins, two belonging to the Zoological Society, and one procured by Mr. Royle at Mussooree, (the two former in their summer, the latter in its winter dress,) appears to be rare in Nepaul, since Mr. Hodgson has never been able to procure a specimen, but contents himself with indicating its existence (*vide* Proceed. Zool. Soc. II. 97); it is not uncommon, however, in the Doon, in Kumaon, and the more western and elevated parts of the Mountains, where it is called the *hill Fox* by the Europeans, and greatly admired for the beauty of its form, and the brilliancy and variety of its colours. The whole length to the origin of the tail is 2 feet 6 inches; that of the tail, 1 foot 6 inches; that of the ears, 4 inches; and the height may be about 1 foot 4 or 5 inches. The animal agrees with the common European and American *Foxes*, (*C. Vulpes* and *C. fulvus*,) in the black marks on the backs of the ears, and in front of the hind and fore legs. The coat consists of long close rich fur, as fine as that of any of the American varieties, and of infinitely more brilliant and varied colours. It consists of two sorts of hair, an interior of a very fine cottony texture, and an external of a long silky nature, but perfectly pliant, and, like the fur of the *Sable*, lying almost equally smooth in any direction. The inner fur is of a smoky blue or brown colour along the back, as is likewise the basal half of the outer silky hair, which, up to this point, is of the same soft cottony texture as the interior fur; it then assumes its harsher silky character, is marked with a broad



whitish yellow ring, and terminated by a long point of a deep bay colour. Hence, along the whole upper surface of the head, neck, and back, the uniform colour is unmixed deep and brilliant red. On the sides of the neck, on the throat, ribs and flanks, is pure white, changing to light smoky blue on the last-named parts. The outer hair of the hips and thighs is tipped with grey instead of red, which gives these parts a hoary appearance, and this colour predominates on all the upper parts of the Society's two specimens, in which the fur is moreover much shorter and coarser, and the colours less brilliant and varied than in Mr. Royle's. The whole under surface of the body is of a smoky brown colour, without any intermixture of long silky hairs. The external colours of the body are, therefore, bright bay on the back, yellowish red on the sides of the body, white on the sides of the neck, hoary grey on the hips, and smoky brown on the throat, breast, and belly. The ears are pretty large and elliptical, their outer surface black; a stripe of the same colour runs down the front of the legs, both fore and hind; the soles of the feet are thickly covered with hair of a yellowish brown colour, except the balls of the toes, which are naked. The brush is large and well finished, of the same colour as the body throughout the greater part of its length, and terminated by a large white point.

Mr. Gray related a series of facts in reference to the habits of a *Cuckoo*, which appeared to prove that the female, though she leaves the eggs to be hatched by another bird, sometimes at least takes care of the young bird and feeds it after it leaves its nest, and teaches it to fly. They may explain how they are taught to migrate.

He also expressed some doubt respecting the eggs of *Cuckoos* being laid in the nest of *Granivorous* birds, and stated an instance where a chicken had been hatched under a *Pigeon*, that the *Pigeon* neglected it when it found that it would not eat the soaked peas, and eventually ejected it from its nest.

Mr. Gray then exhibited and explained a peculiarity in the structure of the ligaments of bivalve shells, and pointed out the peculiarity of some mactraceous shells which had this part, contrary to the general structures, inclosed in the cartilage pit, observing that this structure was found in his genus *Gnathodon*, and in a new genus, which Mr. Gray had called at the British Museum *Mulinia*, of which he described five species; and he also stated the necessity for forming a new genus, of which *Mactra Sprengleri* may be regarded as the type.

Mr. Harvey, of Teignmouth, exhibited various fossils from Devonshire. Of these, sections in different directions had been made, and the surfaces highly polished. The structure was thus rendered beautifully apparent.

Mr. Harvey also exhibited various specimens of *Asterias* and *Ophiura* from the Devonshire coast, and explained the mode by which they had been prepared.

Mr. Gould brought under the notice of the Meeting several spe-

cies of *Birds* from New South Wales, which he considered to be new to science, as they are not contained in the collection of the Linnean Society; nor, as far as he is aware, described in any publication. Mr. Gould embraced this opportunity to characterize and name ten species, and stated that at subsequent meetings of the Society he would bring forward the remainder of his collection.

Mr. Gould more particularly pointed out a species of *Petroica*; a new and interesting species of *Ptilonorhynchus*, allied to *Ptil. nuchalis*, and which he proposed to make the type of a new genus; a new species (belonging to the Society) of the genus *Calyptorhynchus*, which he compared with all the other members of the group then on the table, and described as *Calyptorhynchus Naso*; and four new species of the genus *Amadina*, Swains., which he named *Amadina cincta*, *ruficauda*, *modesta*, and *Castanotis*. The characters of the above species are as follows:

**PETROICA PHŒNICEA.** Mas. *Pet. corpore supernè fuliginoso-griseo fronte, naribus, marginibusque anterioribus remigum tertialium albo notatis; remigibus primariis rectricibusque griseo-nigris, harum externis plumis penitus albis, gula fuliginosa; corpore subtùs coccineo; crisso albo; rostro pedibusque nigris.*

Fœm. *Corpore supernè toto brunneo, tectricibus alæ rufo-griseo emarginatis; rectricibus externis albis corpore subtùs rufescenti-griseis; rostro pedibusque nigris.*

Long. tot.  $5\frac{1}{8}$  unc.; rostr.,  $\frac{1}{2}$ ; alæ,  $3\frac{1}{8}$ ; caudæ, 2; tarsi,  $\frac{5}{8}$ .

Hab. Novâ Hollandiâ.

**AMADINA CASTANOTIS.** Am. *corpore supernè cinereo-fusco; uropygio albo, tectricibus caudæ nigris, albo guttatis; genis castaneorufis lined albi ad basin rostri; pectore griseo lineis nigris transversim striato; notâ nigrâ in medio pectoris; abdomine albo, crisso ochraceo, lateribus castaneis albo guttatis; rostro aurantiaco; pedibus subflavis.*

Long. tot.  $4\frac{1}{8}$  unc.; alæ,  $2\frac{1}{8}$ ; caudæ,  $1\frac{1}{2}$ ; tarsi,  $\frac{1}{2}$ .

Hab. Novâ Hollandiâ.

**AMADINA MODESTA.** Ama. *fronte sanguinolentâ; corpore superiore fusco; alis albo-guttatis; uropygio crissoque alternatim striatis lineis albis atque fuscis; rectricibus nigris, duabus lateralibus externis ad apicem albo notatis; gula nigrâ; corporis inferiore parte cinereo-albido lineis transversis fuscis striato, abdomine intermedio crissoque albis; rostro nigro, pedibus nigrescentibus.*

Long. tot.  $4\frac{1}{2}$  unc.; alæ,  $2\frac{1}{4}$ ; caudæ, 2; tarsi,  $\frac{5}{8}$ .

Hab. in Novâ Hollandiâ.

**AMADINA CINCTA.** Ama. *capite toto argentato cinereo; gula nigrâ; corpore toto pallidè castaneo; fasciâ nigrâ corporis inferiorem partem cingente; tectricibus caudæ superioribus et inferioribus albis; caudâ nigrâ; rostro nigro; pedibus brunneis.*

Long. tot.  $4\frac{1}{2}$  unc.; alæ,  $2\frac{3}{8}$ ; caudæ,  $2\frac{1}{4}$ ; tarsi,  $\frac{5}{8}$ .

Hab. in Novâ Hollandiâ.

AMADINA RUFIGAUDA. Mas. *Ama. fronte genisque coccineis his albo striatis; corpore supernè olivaceo-fusco; tectricibus caudæ caudæque fusco-coccineis, illis guttis pallido-rubris ornatis; gula corporeque infernè olivaceis, griseis, albo transversim notatis, abdomine intermedio crissoque flavidi-albis; rostro coccineo; pedibus pallidi-brunneis.*

Fœm., vel mas junior. *Corpore toto cinereo fusco, abdomine intermedio albo; caudæ rufescente-brunneis.*

Long. tot.  $4\frac{1}{2}$  unc.; alæ,  $2\frac{1}{3}$ ; caudæ,  $1\frac{1}{7}$ ; tarsi,  $\frac{5}{8}$ .

Hab. in Novâ Hollandiâ.

CALODERA MACULATA. Cal. *capite suprâ auricularibus, et gula nitidè brunneis, scapulis plumâ cinereo-argentato cinctis; fasciâ nuchali rosaced; corpore supernè caudæque intensè brunneis; apicibus plumarum in dorso, uropygio, scapulisque, fulco largè guttatis; remigibus albidis; rectricibus flavido-albis, ad apicem notatis; corpore subtus cinereo; lateribus transversuliter brunneo striatis; rostro pedibus fusco brunneis.*

Long. tot.  $11\frac{1}{2}$  unc.; rostri,  $1\frac{1}{2}$ ; alæ, 6; caudæ,  $4\frac{1}{2}$ ; tarsi,  $1\frac{1}{8}$ .

Hab. in Novâ Hollandiâ.

Differt à *Ptilonorhyncho nuchale*, Jard., magnitudine inferiore, nec non maculis supernè sparsis.

CRATICUS HYPOLEUCUS. Cract. *nuchi, dorso, tectricibus caudæ, crisso, rectricibusque caudæ ad basin, albis, reliquis partibus nigris, rostro ad basin plumbeo in nigrum transeunte.*

Long. tot.  $14\frac{1}{2}$  unc.; rostri, 2; alæ,  $9\frac{1}{2}$ ; caudæ,  $5\frac{1}{2}$ ; tarsi, 2.

Hab. Van Diemen's Land.

Differt à specie *Craticus Tibicen* appellatâ, rostro et tarsi brevioribus, æque ac dorsi albo colore.

Hab. in Terrâ Van Diemen dictâ.

CRATICUS FULIGINOSUS. Cract. *corpore toto fuliginoso; remigiis, rectricibusque caudæ ad apicem albis; rostro pedibusque nigris.*

Long. tot. 18 unc.; rostri,  $2\frac{1}{2}$ ; alæ, 10; caudæ, 7; tarsi,  $2\frac{1}{2}$ .

Hab. in Terrâ Van Diemen dictâ.

CALYPTORHYNCHUS NASO. Mas. *Calyp. capitis cristâ, et toto corpore nitidè nigris, rectricibus caudæ duabus intermediis caecis; fasciâ latè coccineâ cinctis; rostro prægrandi ad basin pallidè plumbeo; pedibus caruleo nigris.*

Fœm. *Differt cristâ genis corpore supernè guttis flavis adspersis; corpore inferiore transversis lineis coccineis atque flavis ornato; fasciâ caudali coccineâ, lineis nigris interruptâ, rostro albo.*

Long. tot. 22 unc.; mensura rostri verticalis,  $2\frac{3}{4}$  unc.; alæ, 14 caudæ,  $10\frac{1}{2}$ ; tarsi,  $\frac{3}{4}$ .

Hab. in Novâ Hollandiâ, ad fluminem Cygnorum.

*Calyptorhynchus Naso* differt à reliquis generis speciebus rostri magnitudine, sed corporis magnitudine præter unam omnibus inferiore.

November 8, 1836.

Richard Owen, Esq., in the Chair.

A letter, addressed to the Secretary, by Robert Mackay, Esq., the British Vice-Consul at Maracaibo, and a Corresponding Member of the Society, was read, describing the habits of a *Vulture* (*Vultur Papa*, Linn.) forwarded to the Society for the Menagerie, but which had unfortunately died during the voyage.

After noticing the peculiar habit attributed to these birds, (which frequently congregate to the number of three hundred,) of paying deference to an individual differing from the rest in plumage, and to which the inhabitants of Maracaibo give the title of king, Mr. Mackay proceeds to state:

“These birds, in their flights, ascend to such a height as to be lost sight of, and from their elevation, discover objects of prey.

“They reside in the savannas of a warm and dry temperature; and their travels do not extend beyond five or six leagues of the place where they have been bred.

“They lay their eggs, and hatch their young, in the small concavities of mountains.

“At a distance from towns, villages, and frequented roads, they generally assemble in large numbers; but in the immediate vicinity of such situations the king never deigns to associate with his vassals.”

At the request of the Chairman, Mr. W. Martin read the following description of a new species of the genus *Felis*.

“The beautiful species of *Felis* to which I beg leave to call the attention of the Meeting was brought from Java or Sumatra, and obtained, with other specimens from the same locality, from Mr. Gould. The only writer, as far as I can learn, who notices it, is Sir W. Jardine in the ‘Naturalist’s Library,’ in which work are two figures from specimens in the Edinburgh Museum; but he there confounds it with the *Felis Diardi* of Cuvier, to which species, as indeed also to the *Felis Bengalensis*, it bears a close affinity in the style and colour of its markings. It will be easy, however, to show that the *Felis Diardi* is a very different species to the present. The first description of the *F. Diardi* is in the fourth volume of Cuvier’s *Ossemens Fossiles*, p. 437. ‘There is,’ says Cuvier, ‘in Java another wild Cat larger than *Felis Bengalensis*, very remarkable for the beautiful regularity of its blotches, of which Messrs. Diard and Duvaucel have transmitted to us a skin and a drawing. We shall designate it *Felis Diardi*.’ After describing its colour, he adds, ‘The head is six inches, the tail 2 feet 4 inches, the body 2 feet and a half, and its height at the shoulder must be 18 inches.’ (French measures.) With regard to the *Felis Diardi*, it is somewhat questionable whether it be distinct from the *Felis macrocelis*, or not; at all events

NO. XLVII.—PROCEEDINGS OF THE ZOOLOGICAL SOCIETY.

it is a large *Cat* closely allied to, if not identical with that animal, but certainly distinct from the *Cat* before the Meeting.

"The admeasurements of this species are as follows:

	Pert.	Inches
Head and body . . . . .	1	11
Head from nose to occiput, following } the arch of the skull .. . . . }	0	5½
Tail . . . . .	1	3½
Height at shoulder . . . . .	0	10½
Total length . . . . .	3	2½

"It may be observed, that the individual is adult, as proved by the state of the dentition; its colouring agrees closely with that detailed by Sir W. Jardine. The ground tint is rusty grey the rufous tinge prevailing on the top of the head down the middle of the back, over the cheeks, chest, scapula, fore limbs, and thighs. On the top of the head are two longitudinal markings of black inclosing a space cut up by irregular small rings or dashes of black, and external to these begin two decided black lines (commencing over each eye), which become broader on the occiput and back of the neck, on which latter part they converge, but do not come in contact with each other; they then sweep over the top of each shoulder blending with the markings of the body.

"Continued from the first-described central markings on the head, there runs between these two decided stripes a broken line, assuming between the shoulders the form of elongated open spots, and ultimately a black dorsal stripe continued to the base of the tail; on the haunches, however, it divides into two parallel stripes. The ears are short and somewhat rounded, black at the tips, grey in the centre, and black at and around their base; beyond the black mark at their base, there is a space of dusky grey, which merges into the colour of the neck. The sides of the neck, scapula, fore and hind limbs, are thickly spotted with black. The sides of the body are marbled with obliquely longitudinal marks of dark grey, each mark having an irregular margin of black.

"The lower angle of each eye is black, and two black lines cross the cheek, passing into a throat-mark carried across beneath the angle of the lower jaw; below this is a similar mark but more indefinite; the chest is spotted with black. The abdomen is dirty white which is crossed by rows of black spots in regular order. The upper surface of the tail is grey, the lower yellowish grey; it is marbled by spots of black forming indistinct rings, which, towards the tip, assume a more definite character; the extremity being black. The fur of the body is moderate and sleek; on the tail it is full and soft.

"For this beautiful species of *Cat* I venture to propose the title of *Felis marmorata*. Though inferior in size to the *Felis macrocelis*, this species is related to it, not only in the style of the markings of the fur, but in the elongation of its form, and the length and thickness of the tail; it is a *Rimau Dayan* in miniature; nor, though larger than the *Felis Bengalensis*, is it less allied to that species, between which and the former it constitutes an intermediate grade."

November 22, 1836.

Richard Owen, Esq., in the Chair.

A communication from Mr. Harvey, of Teignmouth, in Devonshire, was read, which referred to a specimen of the *electric Ray* then on the table. The fish was caught in a trawl-net near Teignmouth, and was presented to the Society by Mr. Harvey. When taken, part of a specimen of the small spotted *Dogfish* was hanging from its mouth. The fishermen handle the *electric Ray* while it is alive without being at all affected by it, always taking care to lay hold of the tail.

Mr. Yarrell exhibited a very large *Carp* taken by a net in a piece of water called the Mere, neare Payne's Hill, in Surrey. The length of the specimen was 30 inches, the girth of the body at the commencement of the dorsal fin 24 inches; the weight, 22 pounds. The fish belonged to Edward Jesse, Esq., author of the "Gleanings in Natural History," by whose permission it was exhibited. Mr. Yarrell observed, that he could find no record of any *Carp* so large having before been taken in this country.

Mr. Martin, at the request of the Chairman, read the following notes on the anatomy of *Koala*, *Phascolarctos fuscus*, Desm.

"The acquisition of a young male *Koala* preserved in spirits, and presented to the Society by Captain Mallard, has afforded me the opportunity of examining the *viscera* of this rare and curious animal; which I did with the utmost care. Differing from the *Wombat* in its *dental formula*, in which respect it closely resembles the *Kangaroos*, the visceral anatomy of the *Koala* closely approximates to that of the former animal, as will be perceived by comparing the following notes with the description of the anatomy of the *Wombat* by Mr. Owen.

"On reflecting the skin of the *abdomen*, there appeared a small transverse muscle arising from the skin on either side, which passed over the marsupial bones, towards their upper extremity, acting as a support to, and a compressor of them.

"The *pyramidalis* muscle, to which, on its outer side is attached the inner edge of the marsupial bone, radiated from this bone to the middle line, and sent off a broad *fascia* of fibres over the *rectus muscle* to the cartilages of the ribs. The *rectus* began broad from the cartilages of the lower ribs, its fibres appearing to mix with those of the *pectoralis*; it continued its course broad to the *pubis*, and was inserted in the usual manner. The *external oblique* was thick and

its fibres remarkably strong; the *internal oblique* gave off a strong *cremaster*, which ran down the spermatic cord as far as the *testis*.

"The *transversalis* as usual.

"The first head of the *triceps adductor femoris* was connected by a slip of fibres to the external apex of the triangular base of the marsupial bone, giving to that bone, by its contraction, a slight external motion.

"The *panniculus carnosus* was very strong, especially over the back and sides.

"The capacity of the *thorax* was very small in comparison with that of the *abdomen*.

"The stomach occupied the left side of the abdominal cavity, scarcely passing the mesial line; its pyloric portion bent down abruptly, forming a narrow arch through which protruded the *lobulus Spigelii* of the liver.

"The liver consisted of two equal parts, a right and left, both closely attached by membranous (or peritoneal) processes to the diaphragm; the *ligamentum latum* verged towards the left side. The right portion of the liver was divided into three foliaceous lobes, the left into two: the free edges of this *viscus* were deeply and abruptly fissured, as if cut with a knife; and its under surface presented an irregular congeries of small *lobuli* or appendages, clustered thickly together; on the left side, the outer lobe of the liver passed completely behind or dorsad of the stomach, the cardiac portion of which advanced as low as the left kidney. The outer lobe of the liver on the right side advanced in a pointed form, and passed behind the whole of the dorsal surface of the right kidney. The great mass of the liver had, in fact, a dorsad position, the anterior portion being comparatively very trifling.

"The gall-bladder was seated in the fissure between the first and second lobes, reckoning from the right side; it was very large, but empty. Of great width at its base, it narrowed gradually to an almost vermiform apex, and its total length was  $3\frac{1}{2}$  inches. Its duct, of considerable calibre, terminated exactly one inch below the *pylorus*.

"The spleen was long, thin, and tongue-shaped; it lay loosely adhering to the *cardium*; its greatest breadth was  $\frac{1}{2}$  an inch, its length, 2 $\frac{1}{2}$  inches; its edges were very thin and slightly crenulated.

"The pancreas presented a thin, flat portion, attached to the spleen, whence ran a broad slip attached to the peritoneal reflection at the back of the stomach, and advancing round to the *duodenum*. Its duct joined that of the gall-bladder  $\frac{3}{4}$  of an inch from its insertion.

"The stomach was divided by a contraction, into two distinct portions; of these, the cardiac was large and almost globular, its breadth across being 2, its length across  $2\frac{1}{2}$  inches; its *parietes* were much thinner than those of the pyloric portion, which, as we stated, bent down abruptly, so as to form a narrow arch. The breadth of the *pylorus* at its commencement, was little more than an inch, but it swelled out into a *sacculus*, whence it narrowed to the pyloric

orifice. Following its greater curve it measured  $2\frac{1}{2}$  inches, along its smaller, only  $\frac{1}{4}$  of an inch. It was slightly puckered transversely on the sides by a posterior longitudinal band of fibres. Anterior to the entrance of the *oesophagus*, and occupying the space of the smaller curvature of the stomach, between the *oesophagus* and the contraction, was situated a large thick gland, opening by numerous ducts, whose mouths clustered together, formed a sort of network. On each side of this gland the inner membrane of the stomach was longitudinally corrugated with small *rugæ*, whence larger *plicæ*, and more distinct from each other, were continued down the inner surface of the *pylorus*, to its orifice, which was closed with a strong sphincter-valve; the cardiac pouch was lined with a thin smooth cuticular membrane. The *duodenum* began pyriform with a small *sacculus*  $\frac{5}{8}$  of an inch in breadth, whence it narrowed to  $\frac{3}{8}$  of an inch; this being its average breadth. Its course was as follows: Leaving the *pylorus*, and bound to the spine by mesentery, it advanced over the right kidney, then crossed the spine, turned up on the left side under the cardiac portion of the stomach, and merged into *jejunum*. The whole of the inner membrane of the small intestines exhibited a beautiful velvety tissue.

"The *cæcum* was of enormous magnitude, and slightly puckered equidistantly or nearly so throughout its whole length into *sacculi*, by a slight longitudinal (mesenteric) band of muscular fibres; there appeared also, faint traces of an opposite band. Turning spirally on itself and beginning large, it gradually narrowed, the decrease of its last portion, for the length of 18 inches, being very marked; this portion running to a long vermiform point. The total length of the *cæcum* was 4 feet 2 inches. Basal breadth, 2 inches. The *colon*, resembling in character the first portion of the *cæcum*, was slightly contracted into large *sacculi*, the first *sacculus* just below the entrance of the *ileum*, being more decided and larger than those which succeed; it was, however, nothing more than a simple enlargement, without any pyramid figure. After a course of 17 inches, the *colon* decreased in size to the breadth of  $\frac{3}{8}$  of an inch; the total length of the large intestines was 6 feet 4 inches. The inner membrane of the *rectum* was corrugated longitudinally.

"The lungs consisted of 3 right lobes, one large, and two small; and of two left lobes, the lower by far the largest.

"The heart was compressed and pointed; its length was two inches.

"The *aorta* gave off as usual 3 branches for the supply of the anterior portion of the body. The first or *arteria innominata*, however, almost immediately divided into carotid and subclavian. The right auricle presented at its upper part a semilunar notch fitting to the base of the *aorta*, two points rising up, one on each side of the *aorta*, as auricular appendages. Into the upper part of the auricle just behind the right appendix entered the right *vena cava superior*; and into the inferior portion of the auricle close to the entrance of the *vena cava inferior*, entered the left *vena cava superior*. The *vena azygos* running up on the left side of the *aorta*, entered the left *vena*



*cava superior* an inch from its termination. This arrangement of the *venæ cavae* appears to be normal in the *Marsupials*, as Mr. Owen has previously observed.

"Six coronary veins entered the right auricle round its junctional margin with the ventricle.

"The auriculo-ventricular opening on the right was of moderate size, with a simple valve, the edges of which were bound down by the tendons of two distinct *carnea columna*; a third *fasciculus* of fleshy fibres, but very indistinct, were to the right of these, but they could hardly be said to constitute a third *carnea columna*. The right ventricle does not approach the *apex* of the heart by  $\frac{1}{8}$  of an inch. No trace of *foramen ovale*. Pulmonary artery very wide, dividing after a course of  $\frac{1}{2}$  an inch in two branches, a right and left. Right ventricle very thin; the left, very thick and firm.

"Of the kidneys, the right was seated higher, nearly by its whole length, than the left; the lower end of the former and the upper end of the latter being parallel. In shape, these organs were oval, and but slightly compressed. Their *pelvis* was small, the *papilla* single and obtuse; the cortical and cineritious layers very distinct. Length,  $1\frac{3}{8}$  of an inch; breadth,  $\frac{7}{8}$  of an inch.

"The *penis*, of small size and conical figure, was placed immediately anterior to the *anus*; it was slightly bifurcate, or rather had two projecting *papillae*, one on each side of the urethral orifice. Length of spongy portion,  $\frac{3}{4}$  of an inch. Bladder small, oval, and much contracted. *Testis*, of the size of a horsebean. Total length of *vasa deferentia*,  $2\frac{1}{2}$  inches; their entrance was below and external to the ureters, which opened as usual. Prostate small. *Vesicula seminales* small; they entered  $\frac{2}{3}$  of an inch below the bladder, with Cowper's glands, which were as large as a tare.

"The thyroid glands were oval, compressed, and small; their colour pale; they began at the 4th ring of the *trachea* from the thyroid cartilage, and extended to the 9th or 10th.

"There was a round subzygomatic gland the size of a pea on the *masseter*, and two others of the same character were placed on the front of the neck, on the *platysma myoides*.

"The submaxillary glands were thin and long, measuring 1 inch in length. Their situation was as usual.

"The parotid glands, very extensive but superficial, occupied the usual situation; the duct passed over the *masseter*, and entered opposite the 3rd molar, anterior to the edge of the *buccinator*.

"The *sterno-cleido-mastoidus* was attached not only to the mastoid process, but also to the whole extent of the occipital ridge; it consisted of two portions arising as usual, from clavicle and sternum.

"The tongue was thick at its base, which rose abruptly from a deep furrow surrounding its root; the distance from its root to the *epiglottis*  $\frac{7}{8}$  of an inch. Its form was narrow, equal, and rounded at the tip; its surface was velvety, and one large central *papilla* was

seated near its base. Length altogether 2 inches. Breadth  $\frac{1}{2}$  an inch. Length of free part  $\frac{2}{3}$  of an inch. The palate was divided by elevated transverse ridges into 8 furrows.

"Pharynx spacious, and lined with a corrugated membrane. Oesophagus narrow, its inner membrane being puckered longitudinally.

"The anterior surface of the thyroid cartilage was regularly convex, but not so protuberant as in the phalangians; nor did the *os hyoides* play freely over it."

Mr. Edward Burton, of Fort Pitt, Chatham, communicated a description of a small species of *Pipra* received from the Himalaya mountains, and considered by Mr. Burton to be the first species of this genus yet discovered in those regions.

#### Genus *PIPPA*, Linn.

*P. squalida*, capite et cervice suprâ brunneis; interscapulio, dorso, alis et caudâ viridescenti-brunneis; hac ad regionem subapicalem brunnea saturatori, sed apice externo albo graciliter fimbriat; alarum caudæque pogniis externis olivaceo leviter tinctis; corpore infrâ ubique albidio.

Mandibula superior fusca, inferior albida apice fusco. Pedes nigri. Longitudo  $3\frac{1}{2}$  poll. Alæ caudam æquant.

Hab. apud Montes Himalayenses.

In Museo Medico-Militari, Chatham.

The following observations on a species of *Glaucus*, referred to the *Glaucus hexapterygius*, Cuvier, by George Bennett, Esq., F.L.S., Corresponding Member of the Zoological Society, Surgeon and Superintendent of the Australian Museum at Sydney, New South Wales, were read.

"On the 20th of April, 1835, during a voyage from England to Sydney, New South Wales, in latitude  $4^{\circ} 26' N.$ , and longitude  $19^{\circ} 30' W.$ , with light airs and calms prevailing at the time, about 3 p.m., a number of damaged and perfect specimens of the *Glaucus hexapterygius*, Cuv., were caught in the towing net. On being immediately removed from the net and placed in a glass of sea water, they resumed their vital actions and floated about in the liquid element, exhibiting a brilliancy of colour and peculiarity of form, which did not fail to excite the admiration of the beholders.

"The back of the animal, as well as the upper surface of the fins and digitated processes, and the upper portion of the head and tail, was of a vivid purple colour, varying occasionally in its intensity; appearing brighter in colour when the animal was active or excited, and deeper when remaining floating tranquilly upon the surface of the water. The abdomen, and under surface of the fins, are of a beautiful pearly white colour, appearing as if it had been enamelled. The usual length of my specimens, measured from the extremity of

the head to the tail, when extended floating upon the surface of the water, was  $1\frac{1}{2}$  inches; sometimes one or two lines more or less. The body of the animal is subcylindrical, terminating in a tail, which gradually becomes more slender towards the extremity, until it finally terminates in a delicate point. The head is short, with very small conical *tentacula* in pairs; two superior, and two inferior; three (and in *G. octapterygius*, Cuv., four) branchial fins on each side, opposite, palmated, and digitated at their extremities; the number of digitations, however, varying; and the centre digitations are the longest; the first branchial fins, those nearest the head, are larger and denser than the others. The mouth is armed with bony jaws; the body is gelatinous and covered by a thin and extremely sensible membrane.

"These little animals were very delicate and fragile in their structure, and although many, indeed, I may say numbers, were caught, yet very few in comparison were found to be in a perfect condition, some being deficient in one, two, or more fins, and others being completely crushed. Not one of the specimens caught on this occasion, or during the voyage, had the silvery line or streak running down the back, from the head to the extremity of the tail; branching off also to the fins and along the centre of each of the digitations. Several *Porpita* were also captured in the net at the same time with these animals, and serve as food for them.

"It caused much regret to see the change death produced in the beauty of these interesting little animals, and all means of preserving them were found to be useless. When placed in spirits, the digits of the branchial fins speedily became retracted, the beautiful purple gradually faded and at last disappeared, and the delicate pearly white of the under surface of the body and fins peeled off and disappeared; thus did this beautiful mollusk become decomposed in less than the space of an hour. Some mollusks quickly lose their colour after death, but retain their form for a long time; but these speedily change after death, both in form and colour, and the beauty before so much admired perishes never to be regained.

"When taken in the hand, the under surface of the animal soon becomes denuded of the beautiful pearly white it previously had, and at that time appears like a small transparent bladder, in which a number of air-bubbles are observed, together with the *viscera*. On the *abdomen* being laid open, a large quantity of air-bubbles escaped, and perhaps a query may arise how far they assist the animal in floating upon the surface of the water?

"The figure of *Glaucus hexapterygius* in Cuvier's work '*Sur les Mollusques*,' is tolerably well executed, but no engraving can convey to the beholder the inconceivable delicacy and beauty of this mollusk; in the engraving alluded to, there is an inaccuracy at least as compared with the specimens before me,—in the digitated processes of the fins not being sufficiently united at the base; in the living specimens before me, they were united together at the base, and then branching off became gradually smaller until they terminated in a fine point. Again, in the engraving in Cuvier's work, the anal orifice is

placed on the right side, whereas in my specimens it was situated on the left; for in all the specimens I examined, I found the *anus* was disposed laterally and could be plainly distinguished situated on the left side of the animal, a little below the first fin. This I consider also the orifice of generation, as in some of the specimens examined, a rather long string of dots resembling *ova* were seen to protrude from it. One of the animals discharged from this orifice a large quantity of very light brownish fluid; this no doubt was the *feces*.

“But few of these animals were caught after the 20th until the 24th of the same month, in latitude  $2^{\circ} 26' N.$ , longitude  $19^{\circ} 51' W.$ , when having light airs from S. by E., nearly calm; in the morning a great number were seen floating by the ship, and it was not difficult, by aid of my towing-net, to capture as many as I required, for they swam very superficially upon the water. The whole of those taken proved to be of the same species (*G. hexapterygius*) as those before caught. I again placed several of the specimens in a glass of sea water; they were full of life, sometimes moving about, not very briskly, however,—and at other times remaining floating upon the surface of the water, merely gently moving the fins. As they floated upon the surface of the water in the glass, the sides of the head, back, tail, fins, &c., exhibited at the time a light silvery blue colour, which was admirably contrasted with the deeper blue of the upper surface, and falling into the elegant pearly or silvery white of the under surface of the animal, displaying an exceedingly rich and elegant appearance. Often, when at rest, the animal would drop one or more of the fins, but on touching them, they would be immediately raised to the former position, and that organ was turned back as if to throw off the offending object, followed at the same time by a general movement of the whole body. On touching the animal upon the back, it seemed to display more sensitiveness in that than in any other part of the body, judging from the effects produced, in comparison with similar experiments on other portions of the body; for instance, the centre of the back was touched lightly and rapidly with a feather; which caused the little creature to sink as if under the pressure of the touch, throwing at the same time the head, tail, and all the fins upwards, followed by a general distortion of the whole body of the animal, as if the gentle touch had been productive of severe pain. I invariably found every part of the upper surface of the body very sensitive when touched, and displayed a general movement of uneasiness throughout the whole of the body of the creature.

“These creatures have a peculiar manner of throwing the head towards the tail, and flouncing the tail towards the head, when they are desirous of removing any object of annoyance. It is at that time these animals seem to recover from their torpidity, and evince the greatest activity in their movements. When much annoyed, they throw the body about with great activity, coiling up the head, tail, fins, &c., in a somewhat rotundiform position; and if the tormenting

object is not removed, dash out again in full activity of body, then return to the rotundiform position, and there remain for a short period apparently exhausted by their efforts. But on the cessation of the irritating cause, the animal quietly resumed its original position, perhaps dropping one or two of its wearied fins according as its own sensations of ease or comfort might dictate.

"When nothing irritated this tender mollusk, it would remain tranquilly floating upon the surface of the water with scarcely any movement but that which proceeded from the undulating movements of the digitated extremities of the fins, as well as an occasional slight twisting motion of the same organs.

"I felt much interest in the beautiful display of a circulating fluid on the dorsal surface of these animals, which was afforded me by the assistance of a microscope. Through the semi-transparent membrane of the back, a fluid could be readily perceived close to the surface, evidently flowing in two directions, one taking a course downwards, and the other returning upwards; but I was unable to distinguish two distinct vessels for these separate actions.

"These animals seemed to be very torpid in their movements, although sometimes, when floating upon the water, they would be seen busily engaged in moving their fins about, but those actions were soon suspended and their fins were suffered to hang lazily down, as if fatigued with the short exertion, which did not move them one inch about the glass of water; and even when the little indolent creatures did take the trouble to move themselves from one side of the glass to the other, it was effected by a tardy motion, stirring themselves first with one fin and then with the other, according as circumstances might require.

"I placed some small specimens of *Porpita* in the glass of water containing the *Glauci*, to observe if they would attack them; for some time one of the *Glauci* was close to a *Porpita* and was even annoyed by the *tentacule* of the latter touching its back, yet the *Glaucus* bore this, although with the usual characters of impatience, yet without attempting to attack it. At last it seized the *Porpita* between its jaws, and by aid of a powerful lens, an excellent opportunity was afforded me of closely watching the devouring process, which was effected by an apparently sucking motion; and at this time all the digitated processes of the fins were floating about, as at other times when the animal was at rest; but I did not observe, in one single instance, that they were of any use to the animal, either to aid in the capture or to securely hold their prey when in the act of being devoured; for the animal seems to depend merely upon the mouth in capturing its prey, as in this and other instances, which I had opportunities of observing, they seized their prey instantly with the mouth, and held it by that power alone, whilst by a kind of sucking motion the prey was devoured. The digitations may therefore only be regarded as appendages to the fins to aid the animal perhaps in the direction of its movements, as it was observed that they turned and twisted them about during the progressive mo-

tion, (that is, when this tardy animal is pleased to progress, which appeared to me very rarely to meet with its inclination,) as if in some way or other to direct the movements of the animal.

"The *Glaucus*, after eating the tentacles and nearly the whole of the soft under surface of its prey, left the horny portion, and remained tranquilly reposing upon the surface of the water after its meal, the only motion visible in the animal being the playing of the digits of its fins. The mutilated remains of the *Porpita* sank to the bottom of the glass.

"Soon after, another *Glaucus* began a devouring attack upon another *Porpita* which had been placed in the glass, eating a little of it and then ceasing after a short meal, occasionally renewing the attack at short intervals. On examining the *Porpita*, which had been partially devoured by the ravenous *Glaucus*, I found the disc had been cleared of the tentacles and other soft parts; a small part of the fleshy portion only remaining upon the disc. Only one part of the horny disc exhibited any injury, and that appeared to be the place where the animal was first grasped by the *Glaucus*.

"When any of these animals came in contact with another in the glass, they did not display any annoyance, or coil themselves up, nor did they evince any savage propensities one towards the other; and they would often float about, having their digitated processes in contact one with the other, without exhibiting any signs of annoyance; even when placed or pushed one against the other, they did not manifest any irritation, but remained undisturbed as in their usual moments of quiet repose.

"On the back of the animal being seen in a strong light, a black line could be discerned on each margin, and passing down the centre of each fin, and sometimes varied in having two black lines on the upper part of one fin, although the opposite fin may display but one.

"The margin between the falling of the purple colour of the back into the silvery white of the *abdomen* often exhibited beautiful tints of a golden green; but these variations were probably produced by the effect of different rays of light.

"These animals soon perished; I could not preserve them for any length of time in the glass of sea water, although the water was changed as often as it was thought necessary; the digitated processes of the fins were observed to shrink up on the death of the animal, and the process of decomposition rapidly took place, the whole body becoming a shapeless mass, having a bluish colour of deadly hue for a short period, and then became of a blackish or brownish black colour. I have seldom seen a gelatinous animal which appeared so firm whilst in the water, that proved so speedily to decompose when removed from it; even the beautiful purple of the back, the silvery or enamel of the *abdomen*, and the silvery blue of the sides, all speedily vanish, indeed instantly disappear, upon the death of the animal, as if it had been washed off; the expansive, delicate, and beautiful fins and digitated processes are no longer seen; they shrank up to nothing.

"Even on taking the animal alive out of the water and placing it

upon the hand, that instant almost, from its extreme delicacy, it was destroyed: the digitations of the fins fell off, the least movement destroyed the beauty of the animal; it speedily lost all the deep purple and silvery enamelled tints, and became a loathsome mass. Thus do we too often find animals beautiful in external adornments, curious in their habits and organization, and calculated in every respect to supply us with inexhaustible sources of intellectual gratification, doomed speedily to perish; brief is the period allotted to them in the busy theatre of animated existence; but doubtless, with the gift of existence, they have received from the bounteous hand of their Creator, the means of enjoying their fleeting lives.

“To place these little animals in the glass of water from the towing net without injury to their delicate structure required care; so that as soon as they were captured in the net, attached to the meshes, they were not handled, but carefully washed off, which was effected by dipping the meshes in the glass of water, when the animal soon detached itself without sustaining any injury, and floated in the water.

“Although these animals are so fragile, so easily destroyed on being taken out of their natural element, yet they fling themselves about in the water without sustaining any injury, without even the loss of any of the digitated processes of the fins; yet when there is much movement of the water in carrying the glass from one place to another, they are evidently disturbed and restless, and the fins are dropped; if therefore, a slight motion of the water disturbs them, what can become of these delicate mollusks during tempestuous weather; can they be similar to the delicate *Ephemeris*, doomed to live merely for the space of a day and perish in myriads? From the immense number seen only from the ship—and how many myriads more extended beyond our range of vision!—it conveyed to the mind some idea of the profusion of living beings inhabiting the wide expanse of ocean, and a feeling of astonishment at the inconceivable variety of forms and constructions to which animation has been imparted by creative power.

“The tail of this animal has been described as resembling that of a *Lizard*: the comparison is good, not only with regard to form, but also, with perhaps a little more flexibility of motion, when in action. Sometimes the animal throws its tail up to the body, as if intended to brush off any annoying object, and at other times, it has been observed to turn the head towards the side as if for a similar purpose. It seems, in the action of eating, to resemble a *Caterpillar*.

“No more of these animals were seen until the 15th of May at 10 P.M., when in lat.  $24^{\circ} 18' 5''$ , long.  $31^{\circ} 1' 01''$  W., moderate breezes and fine weather; a number of *Glauci* were captured as well as *Porpita*; some of the latter had been partially devoured, and in some only the horny disc remained; this, there was no doubt, from the previous knowledge of the carnivorous propensities of the *Glaucus*, was their work, more especially as we had positive proof that tribes of them were wandering or prowling about the ocean to-

night. This was the last time during the voyage the *Glauci* were captured.

"From these animals devouring the *Porpitæ*, we had positive evidence of their carnivorous habits, independent of the structure of the jaws; and the *tentacula* of the *Porpitæ* were no protection against their enemies; indeed, these appendages were first devoured and the horny disc was alone left, in many instances being quite picked clean; from this circumstance we may infer, that the horny discs of the *Porpitæ* and *Velellæ*, which previously, and for the last four days were found in the net, were the remains of those which had been devoured by the *Glauci* or similar carnivorous mollusks, among which we may with safety include (from the structure of its jaws, and from often capturing it attached to *Velella*,) the inhabitant of the *Janthina fragilis* or violet shell.

"The more we pursue the investigation of the actions of living objects, the more we see of the unbounded resources of creative power; and, after all our reasoning, must conclude that some wise purpose, though dimly perceptible to our imperfect understandings, is no doubt answered by this great law of organic formation,—the law of variety."

Mr. Ogilby called the attention of the Meeting to the various preserved specimens of *Antelopes* then exhibited, and made the following observations on some *hollow-horned Ruminants*.

"In arranging the Society's collection subsequent to the late removal from Bruton Street, the following rare or undescribed species of *Ruminants* were observed, which it is thought proper to bring under the public notice of the Society.

"1. *Ixalus Probaton*. A single skin of the very anomalous animal to which I propose assigning this name, was presented to the Society by Dr. Richardson, and has been considered as the female of *A. Furcifer*, from which, however, it differs in some of the most important characters. Of its origin there can be no reasonable doubt; it was contained in the same box with the skins of *A. Furcifer*, and other animals obtained by the celebrated zoologist just mentioned, during Capt. Franklin's memorable expedition, and the hay with which it was stuffed contained numerous small locks of the very peculiar hair of *A. Furcifer*. The specimen is a male about the size of a *fallow Deer*, the length from the nose to the end of the tail being 4 feet 10 inches. The head is  $9\frac{1}{4}$  inches long, the tail,  $5\frac{1}{2}$  inches; and the ear,  $3\frac{5}{8}$  inches. Though the skin is that of an adult individual, as is proved by the incisors, which are all of the permanent class and considerably worn down, the head is without horns, having only two small, naked, flat scales, in the positions usually occupied by these organs; yet the bones of the skull remain beneath, and the specimen is unquestionably the spoil of a male animal. In form, as well as size, the animal resembles the *fallow Deer* (*Cervus Dama*). The colour is a uniform pale reddish brown above and on the outsides of the members; the breast, belly, and inner face of the *anus* and thighs are greyish white; the lower



part of the cheeks, the lips and beneath the chin are of the same colour, but the whole throat or under surface of the neck is pale reddish brown, like the back and sides. The tail is covered above with short reddish hair like that of the body, but it is perfectly naked beneath, and in form and length resembles the tail of some species of *Deer* (*Cervus*). The nose is hairy like that of a *Goat*; the animal is furnished with lachrymal sinuses of considerable size, opening by very obvious apertures of a circular form; it has inguinal pores and two teats, as in the common *Antelope* (*A. Cervicapra*); large spurious hoofs, and no appearance of *scopæ* or knee-brushes either on the anterior or posterior extremities. These characters will not permit it to be associated with any known group of *Ruminants*. That it is not merely a *Deer* which has cast its horns, is proved by the absence of the pedestals which support these organs in the solid-horned *Ruminants*, as well as by the hairy lips, two teats and inguinal pores; neither can it be a *Sheep* or a *Goat*, as is evinced by the lachrymal sinuses, inguinal pores, and the length and form of the tail, which, in the wild species of these genera, is nearly tuberculous. The supposition of its being the female of *A. Furcifer* is disproved by the sex of the specimen; in other respects, the existence of large spurious hoofs shows plainly enough that it has no affinity to that animal. There is but one other supposition: may it not be a species of *Antelope* allied to the typical group of that genus? and may not the abortive horns of the present specimen be the result of some accident? This may certainly be the case; the other characters of the specimen agree with those of the common *Indian Antelope*, and if the animal should eventually prove to belong to that genus, it may bear the specific name of *A. Tralus*, which the classical scholar will recognise as the name of an undetermined species of *Ruminant* mentioned in the *Iliad*.

"2. *Antelope Furycerus*. Of this magnificent and hitherto undescribed species, two pairs of horns, one attached to the skull, the other to the integuments of the head, have long existed in the Society's collection. Their origin is unknown, but I have reason to believe that they come from Western Africa. Their length in a straight line is 2 feet  $1\frac{3}{4}$  inch; on the curve, 2 feet  $7\frac{1}{2}$  inches; their circumference at the base is 10 inches; their distance at base 1 inch, and at the points 11 inches. In form they bear some resemblance to those of *A. Strepsiceros*, being wrinkled as in that species, and having a prominent ridge on their posterior face; but they form only one spiral twist instead of two, and their direction throughout lies in the plane of the forehead, whilst in the *Koodoo* these two planes form an angle of about  $100^{\circ}$ . The characters of the skull are likewise similar to those of the *Koodoo*, but it is broader and larger than in that animal. The points of the horns are of an ivory colour. The animal has a large muzzle, but is without lachrymal sinuses; it has a white band across the face, immediately under the eyes, and two white spots on each cheek. All these characters are distinctive of the natural group which includes the *Koodoo*, the present species, the *Boshbok*, the *Guib*, and the beautiful species mentioned by Mr.

Bennett (Proc. Zool. Soc., 1833, p. 1.) which is a real *Antelope*, and which I hope shortly to have an opportunity of describing in detail under the name of *A. Doria*, as a friend, who has connexions with the West Coast of Africa, has kindly undertaken to procure me skins.

“3. *Antelope Philantomba*. Two females of this minute species lived for some time in the Society’s Gardens: they were brought from Sierra Leone and presented by Mr. McCormick. Mr. Rendall, who saw them with me at the Gardens, assured me that they were the *Philantomba* of the Sierra Leone negroes. The larger and older specimen has small horns about  $1\frac{1}{2}$  inch long, bent slightly forwards and surrounded at the base with 5 or 6 small rings: the species is distinguished from the *pygmy Antelope* of the Cape by its longer tail and ears, the latter clothed with white hair on the inside, by the darker mouse-colour of the body and the uniform hue of the legs, which instead of being sandy red as in the Cape species, are of the same colour as the body, only rather paler. But for the circumstance of the female possessing horns, I should have been inclined to identify this animal with the *A. Maxwellii* of Col. Smith.

“4. *Antelope Sumatrensis*. This species and *A. Thar* were exhibited together for the purpose of pointing out the similarity of their zoological characters, and correcting a mistake into which Messrs. F. Cuvier, Desmarest, and Col. Smith have fallen with regard to the former species. According to these zoologists the *Cambing Outan* (*A. Sumatrensis*) possesses both the lachrymal sinus and the longitudinal gland on the maxillary bone, which distinguishes the *Duykerbok* (*A. Mergens*) and some other *Antelopes*: in reality the lachrymal sinus is sufficiently distinct, but there is not the slightest trace of any maxillary gland. The same zoologists represent the female *Cambing* as being without horns and having only two teats: the specimen exhibited, a young female, had tolerably large horns and distinctly showed four teats, thus agreeing in all respects with the adult female *Thar* with which it was compared.

“5. *Antelope palmata*. Colonel Smith has described the horns of this species from an imperfect pair preserved in the Museum of the College of Surgeons, but was undecided whether it should be considered as a distinct species or only a variety of the *Prongbuck* (*A. Furcifer*). The present perfect pair, with the skin of the head attached, goes far to prove the specific distinction, but the habitat is widely different from that assigned by Colonel Smith. The specimens came from Mexico, where Dr. Coulter informs me it is sufficiently common. The horns are twice or thrice as large again as those of *A. Furcifer*, and instead of preserving a tolerable degree of parallelism, as in that species, spread widely, and are much hooked at the points. The face also is of a very dark brown colour, whilst in *A. Furcifer* it is of the same light fawn as the upper parts of the body.”

Mr. Gray exhibited a specimen of *Argonaut* with an *Ocythoe* from the Cape of Good Hope, and stated that as the subject had been brought forward at the last meeting, he was induced to remark that every time he considered it, and compared it under its various

bearings with the relations of other *Molluscans* and their shells, he was more and more inclined to believe that the animal found in the shell of *Argonauta* was a parasite. He gave the following reasons for this belief.

"1. The animal has none of those peculiarities of organization for the deposition, formation, and growth of the shell, nor even the muscles for attaching it to the shell, which are found in all other shell-bearing *Molluscans*; instead of which it agrees in form, colour, and structure with the naked *Mollusca*, especially the naked *Cephalopods*.

"2. The shell, although it agrees in every respect with the shells of other *Molluscans* in structure, formation, and growth, is evidently not moulded on the body of the animal usually found in it, as other shells are; but exactly agrees in every point (except in the form of the spine), with the shell of *Carinaria*, which coincided with the other *Molluscans* in all these respects.

"3. The body of the animal does not appear to have the power of secreting calcareous matter, for it does not, like all the *Mollusca* which have that power, secrete either a solid deposit or distinct *septa* to adapt the cavity of the shell to the increase of the body, nor does it cover over with calcareous matter any sand or other extraneous bodies which may have accidentally intruded themselves between the mantle and the shell, but leaves the sand, which is often found mixed with the eggs, free, without taking any means to prevent it from irritating the skin.

"4. The young shell of the just hatched animal which forms the *apex* of the shell at all periods of its growth, is much larger (ten times) than the eggs contained in the upper part of the cavity of the *Argonaut*.

Mr. Gray further stated, that he does not think that any inference can be drawn in favour of the opinion that the *Ocythoe* forms the shell, from either of the three arguments which have been produced in favour of that hypothesis, which he then examined in detail.

"5. He believes that Poli must have been misled when he thought that he had discovered the animal in the egg of an *Ocythoe* covered with the "rudiment of a shell," because all the *Molluscans* which he has seen in the egg (*Cephalopods* as well as others) were covered with a well-developed shell, even before all the organs were developed, and the figure which Poli gives of the rudiment does not agree with the nucleus found on the *apex* of the shell of the *Argonauts*. Unfortunately, none of the eggs of the *Ocythoës* that have been examined by other observers have been enough developed to show the foetal animal.

"6. The different species of *Argonauta* are said to be inhabited by different species of *Ocythoe*; but allowing this to be the case, it only proves that each of these genera have local species: the same may be observed with respect to the *Hermit Crabs*, without proving anything in favour of their being the framers of the shell they live in.

"7. That though some specimens of *Ocythoe* preserved in their

shells are marked with cross grooves resembling the grooves on the shell, yet these grooves are only formed by the pressure of the dead animal against the shell; for the specimens of the animal which are found out of the shell, or which are taken out of the shell while recent, are always destitute of these grooves, or of the compressed form of the cavity of the shell. That some specimens which he had received from the Cape (of which that now on the table was one), which had been packed on their sides, had the upper side of the animal smooth and rounded, and the lower flat, and curved like the shell on which it was pressed by its own weight; while a specimen which he had received from the Mediterranean packed erect, with the mouth upwards, so that the animal was equally pressed against each side of the shell, was flattened and curved on each side, like the specimen examined by M. Ferussac.

Mr. Gray also stated that, so far from the animal using the finned arms as sails, they were the means by which it retained itself in the shell; and he further observed, that it was very difficult to distinguish the species of *Argonauta*, as they varied greatly in shape, and that on a comparison of many specimens, he had found that the presence or absence of the spines or cars at the back of the mouth were of no importance as a specific character, specimens of each of the recorded species having this process developed only on one or the other side.

The Chairman, after premising some observations on the diseases to which the mortality of the larger feline animals in the Society's Menagerie was attributable, proceeded to read the following description of two *Entozoa* infesting the stomach of the *Tiger*, (*Felis Tigris*, Linn.,) one of which forms the type of a new genus of *Nematoidea*.

"I received a few days ago, from the Medical Superintendent of the Society's Menagerie, a portion of the stomach of a young *Tiger* (which died of rupture of the *aorta*), exhibiting on the internal or mucous surface what were considered to be scrofulous tumours. They were five or six in number, of a round and oblong form, varying in size from half an inch to two inches in the largest diameter, and the largest of them projecting about half an inch from the plane of the inner surface: they made no projection externally. The mucous membrane covering the smaller tumours was puckered up into minute reticulate *rugæ*: the surface of the largest tumour was smooth. On wiping away the tough thick mucous secretion from the tumours, and examining more closely their surface, two or three orifices presented themselves in the larger, and a single orifice in each of the smaller tumours. These orifices conducted to irregular sinuses which were the *nidi* of two kinds of *Nematoid Entozoa*, some measuring nearly an inch in length and a line in thickness; the others being more minute, not exceeding 5 lines in length, and about  $\frac{3}{10}$  of an inch in diameter. Only a pair of the larger *Entozoa* were found in each of the three largest tumours; the smaller species existed in countless numbers.

"Before proceeding with the description of the worms, I may

briefly conclude the history of the tumours by observing that they were composed of condensed accumulated layers of the sub-mucous cellular tissue, presenting a flat surface next the muscular coat, to which the larger tumours firmly adhered, and projecting with a rounded convexity towards the cavity of the stomach, where the sinuses opened and terminated. They did not contain any of the caseous secretion characteristic of *struma*, but were most probably caused by the irritation of the *Entozoa*.

"The dimensions of the larger *Entozoa* above given are those of the female; the male is about one fourth smaller. In both sexes the body is slightly attenuated at the two extremities; the caudal extremity is more inflected and more obtuse in the male; the oral extremity in both is obtuse and truncate.

"The surface of the body appears to the naked eye to be minutely striated transversely: it is variegated by the white genital, and amber-coloured digestive tubes appearing through the transparent integument. When examined with a lens of half-inch focus, the anterior two-thirds of the body are seen to be covered with circular series of minute reflected spines, which, viewed with a still higher power, present three distinct points, one large one in the middle and two small lateral ones.

"The mouth is surrounded by a tumid circular lip armed with six or seven circular rows of well-developed spinous processes of a similar complex structure to those on the body. The oral orifice itself presents the form of a vertical elliptical fissure, bounded on each side by a jaw-like membranous fold or process, the anterior margin of which is produced in the form of three straight horny points or processes, directed forwards. These lateral processes can be protruded beyond the circular lip by compressing the smooth spineless skin behind the latter; and the elasticity of the structure causes them to be again retracted on remitting the pressure.

"The *vulva* is situated at the junction of the middle and posterior thirds of the body; the *anus* in the female is in the form of a transverse semilunar fissure immediately behind the obtuse posterior apex, and on the concave side of the inflection.

"The *anus* of the male, from the anterior part of which a single slightly-curved intromittent *spiculum* is protruded, is surrounded by eight distinct pointed *papillæ*, three of which are placed in a vertical row on each side, and two smaller ones at the lower boundary of the common opening to the *rectum* and male gland.

"On comparing this *Nematoid* worm with those already described, it approaches most nearly to some species which are referred by Rudolphi to the genus *Strongylus*, as the *Strongylus trigonocephalus*, R., (*Hist. Entoz.* ii. pl. I. p. 231.) in which species the '*Bursa maris subglobosa, biloba, multiradiata*,' presents an approximation to the structure of the external male organs above described, in which the eight tubercles surround the opening somewhat after the manner of rays. But on pursuing the comparison we find that here the resemblance ceases: there is no subglobose bilobed sheath to the intromittent organ in the species here described; the head is sur-

rounded by a circular instead of a trigonal lip; the *Strong. trigonocephalus* is placed by Rudolphi in the section *c, ore nudo*, while the armature of the mouth, in the present species, is so remarkable, as to induce me to regard it as the type of a new genus, which I propose to denominate *Gnathostoma*\*.

"GEN. CHAR. *Corpus* teres, elasticum, utrinque attenuatum. *Caput* unilabiatum, labio circulari tumido integro; os emissile, processibus corneis maxilliformibus duobus lateralibus denticulatis. *Genitale masculum* spiculum simplex, ad basin papillis circumdatum.

"*Sp. Gnath. spinigerum*. *Gnath.*, capite truncato, corpore seriebus plurimis spinulorum armato.

"The generic difference indicated by the external peculiarities of the *Entozoa* above described, is confirmed by the internal anatomy, which presents some peculiarities which appear not to have been hitherto detected in the class *Entozoa*: I refer more particularly to a distinct salivary apparatus, conformable to that which exists in the *Holothuria* and other *Echinodermata*. This apparatus consists of four elongated straight tubes, each about two lines in length, which are placed at equal distances around the commencement of the alimentary canal, having their smaller extremities directed forward, and opening into the mouth, at the base of the lateral tridentate processes, and their closed obtuse ends passing backwards into the abdominal cavity. When examined with a lens of  $\frac{1}{4}$  inch focus, the *parietes* of these salivary tubes present very distinct oblique or spiral decussating fibres; their contents are semi-pellucid in the recent worm, but become opaque in spirit of wine.

"The coexistence of these salivary glands with an oral apparatus which is better adapted for trituration than any that has hitherto been detected in the *Entozoa*, is conformable to the laws which regulate the existence and condition of the salivary apparatus in higher animals; and is highly interesting on that account. The only allusion which I can find to salivary organs in other *Entozoa* is in Cloquet's '*Anatomie de l'Ascaride Lumbricoide*,' in which he considers the thickened glandular *parietes* of the *œsophagus* to serve for an analogous secretion.

"The first portion of the alimentary canal or stomach, is about 3 lines in length; it contains a milk-white substance, and is separated by a well-marked constriction from the remaining portion, which we may regard as intestine: this is filled with a pulpy substance of an amber colour, which grows deeper in tint as it approaches the *anus*. The intestine enlarges slightly as it passes backward; it is wide and straight: is not tied down to the *parietes* of the body by mesenteric filaments as in the *Strongylus gigas*, &c.; its surface is irregular, and it seems to contain a spiral tube or valve, but this appearance arises from the nature of the internal surface of the intestinal tunics, which is beset with large regular obtuse lozenge-shaped processes arranged in alternate longitudinal rows.

"The lateral lines of the body consist distinctly of two vessels,

\* *γναθος* *maxilla*, *στομα* *os*.

which project into the interior of the body, being attached by a small part of their circumference; and becoming very wide and free near the head. The dorsal and ventral nervous cords are plainly visible in the midspace of the lateral vessels. The muscular tunics of the body are well developed, consisting of external transverse and internal longitudinal fibres. The latter are lined with a layer of pulpy flocculent substance.

"The male organs consist of a slightly-curved slender single *spiculum*, projecting from the caudal extremity of the body, as above described. The base of this *spiculum* communicates with a dilated receptacle, 2 lines long, of an opaque white colour, which is separated by a slight constriction from the rest of the seminal tube; this is, as usual, single: it is semi-transparent, and gradually grows smaller to its blind extremity, which is attached by cellular tissue to the middle line of the ventral surface of the body, half-way between the two extremities. The whole length of the seminal tube is ten times that of the entire worm.

"The female organs consist of the *vulva*, *vagina*, *uterus bicornis*, and *oviducts* or *ovarian tubes*.

"From the *vulva*, the situation of which has been already mentioned, the *vagina* is continued, at first wide, then narrower, and lastly widening again to pass into the *uterus*: it exceeds an inch in length. The two *cornua* of the *uterus* are each about  $\frac{1}{2}$  a line in diameter, and 5 lines in length; they diminish and are continued without any constriction into the *ovarian tubes*; these are of immense proportional length, each exceeding, by 30 times, the length of the body; their attenuated extremities or beginnings are not attached to the *parietes* of the body; although the coils of the *oviducts* appear at first sight to be inextricably interwoven around the intestine, they in reality cover it in aggregate folds, which are easily separated from the intestine, and unravelled."

Mr. Owen stated in conclusion, that preparations exhibiting the male and female organs thus unfolded, with the digestive canal and salivary apparatus, had been deposited in the Museum of the Royal College of Surgeons.

December 13, 1836.

Richard Owen, Esq., in the Chair.

Part of a paper by M. Frederick Cuvier was read, on the Family of the *Dipodidae*, including the *Jerboas* and *Gerbillas*\*.

Mr. F. Debell Bennett, Corresponding Member of the Society, then read some Notes on the anatomy of the Spermaceti Whale, (*Physeter macrocephalus*, Auctorum,) principally relating to its dentition, and to the structure and appearances presented by the soft parts.

Mr. Bennett remarks that a greater disproportion exists between the sexes in this species of *Whale* than is observed in any other cetaceous animal; for while the usual length of the largest male *Cachalots*, taken in the South Seas, is about 60 feet, that of full-grown females is only 28, and rarely, if ever, exceeding 35.

When the young male *Cachalot* has attained the length of 34 feet, its teeth are perfectly formed, though not visible until it exceeds 28. The upper jaw usually described as toothless, has on either side a short row of teeth, sometimes occupying the bottom of the cavities which receive the teeth of the lower-jaw, but generally corresponding to the intervals between them. The entire length of these teeth is about three inches; they are slightly curved backwards, and elevated about half an inch above the soft parts, in which they are deeply imbedded, having only a slight attachment to the maxillary bone. Their number is not readily ascertained, because the whole series are not always apparent; but in two instances Mr. Bennett found 8 on each side. These teeth exist in adult *Whales* of both sexes, and though not visible externally in the young *Cachalots*, may be seen upon the removal of the soft parts from the interior of the jaw.

“The eye of the *Cachalot* is small, and placed far back on the head, above and between the pectoral fin and angle of the lower jaw. Its situation is chiefly marked by a raised portion of integument around it. The aperture for vision does not exceed 2 inches in the longitudinal, and 1 inch in the vertical direction. The eyelids are without cilia and tarsal cartilages; they are composed of two horizontal bands of integument, each, in the example from which I describe (viz. a half-grown male), two inches in depth, and connected with each other at the inner and outer *canthus*. Between each of the eyelids and the blubber exists a distinct line of separation, marked by a somewhat deep groove, having a duplicature of thin membrane, serving as a surface or hinge on which the lids move. At these lines of demarcation all integument partaking of the nature of fat ceases, and the texture of the *tarsi* thus insulated is composed solely of common skin and cellular and other membranes, together with a dense layer

\* The abstract of this and the concluding part of the Memoir will be found in the Proceedings for December 27, 1836.



of muscular fibres deposited in its centre. The *conjunctiva* of the lids is highly vascular, injected with blood, and covered with orifices of mucous ducts. At the inner canthus of the eye it forms a thick duplicature, of crescentic form, constituting a rudimental third eyelid, not unlike the haw of the horse. The globe of the eye is chiefly lodged in the soft parts, but little if any of its substance entering the bony orbit. It is deeply set within the lids, and does not in size much exceed that of an ox. Its size in an adult female was  $2\frac{1}{2}$  inches in the longitudinal, and the same in the vertical direction. The anterior or cavity was  $1\frac{1}{2}$  inch in each of the last-named directions, and its depth  $\frac{2}{3}$  of an inch only.

"The globe at its greatest circumference was  $7\frac{1}{2}$  inches: the transparent *cornea* at its transverse or broadest diameter measured 1 inch, and in its vertical or narrowest  $\frac{7}{8}$ ths of an inch. The muscles of the globe formed a dense mass surrounding the sheath of the optic nerve, and were inserted in one continuous line over the circumference of the globe at its greatest convexity.

"The optic nerve before penetrating the sclerotic is continued to some length. It does not exceed the circumference of a crow's quill, but is surrounded by a dense fibrous sheath nearly 4 inches in perimeter, and which, where the nerve perforates the globe, terminates on the posterior surface of the latter. Around the globe and its muscles much cellular tissue and true fat are deposited. The eyeball in shape is not a perfect sphere; its anterior and posterior surfaces are flattened: that portion of the *conjunctiva* of the globe immediately surrounding the *cornea*, and the only portion exposed between the aperture of the lids, is of an intense black hue. It is possible this dark portion may be a membrane distinct from the *conjunctiva*, since around the extent it occupies, it terminates by an irregular margin, and is capable of being detached from the *conjunctiva*, when it presents the form of a delicate layer of cuticle, with a black pigment deposited beneath its surface\*.

"The *cornea* of the Cachalot is dense, and composed of many layers; when divided, a small quantity of limpid aqueous humour flows forth: the anterior chamber of the eye is very limited, and the crystalline lens projects into it through the pupillary aperture. The iris is a coarse membrane of a dull-brown colour, with a narrow zone of lighter hue surrounding its outer margin. Its inner and free margin is very thin, and embraces the protruding convexity of the lens.

"The lens is small, certainly not exceeding in size that of the human eye: it forms nearly a perfect sphere: the vitreous humour tolerably abundant. The retina was spread with beautifully delicate arborescent vessels, and afforded a small bright spot at the insertion of the optic nerve. Beneath the retina was spread a *tapetum* of dense membranous texture, and yellow-green or crugo-green colour. The sclerotic at its posterior third is thick, fibrous, and resisting, whilst its anterior third is thin and flexible; no lachrymal apparatus exists."

\* A slight dark tint around the cornea is not uncommon amongst the dark-skinned natives of warm countries.

In the description of the organs of generation; the cavity in the head containing the spermaceti; and some more of the soft parts, Mr. Bennett's observations coincide with those of Hunter and other comparative anatomists.

A *fetus* apparently of mature growth, taken from the *abdomen* of a *Sperm Whale*, measured 14 feet in length and 6 in girth; its position in the *uterus* was that of a bent bow.

Mr. Reid brought before the notice of the Meeting a new species of the genus *Perameles*, and read a paper giving some account of its habits, and pointing out its distinguishing characters.

The author states that he was indebted to William Holmes, Esq., of Lyon's Inn, for the opportunity of exhibiting this specimen, which was brought from Van Diemen's Land, where these animals are said to be common. The same species is also found in Western Australia, and is there called by the natives *Dalgheit*, and by the colonists the *Rabbit*, under which name it is mentioned by Cunningham in his work on New South Wales. Widdowson, in his account of Van Diemen's Land, notices it; but neither of these writers has given any description of the animal. From its resemblance to the Rabbit, Mr. Reid proposes for it the specific name of *Lagotis*.

*PERAMELES LAGOTIS.* *Per. griseus, capite, nuchâ, et dorso, castaneo lavatis; buccis, lateribus colli, scapulis, lateribus, femoribus extus, caudâque ad basin, pallide castaneis; mento, guld, pectore, abdomine, extremitatibus intus anticæque, antibrachiis postice, pedibusque suprâ albidis; antibrachiis externè pallidè griseis, femoribus extus posticeque saturatè plumbeis; caudâ, pilis longis albescentibus ad partem basalem, indutâ, dein pilis nigris tectâ, parte apicali albidâ, pilis longis supra ornatâ. Vellere longo molli. Caudâ pilis rudis vestitâ; pilis ad pedes brevissimis. Labio superiore, buccisque, mystacibus longis sparsis. Auriculis longis, ovatis, intus nudis, extus pilis brevissimis brunneis, ad marginem, albescentibus indutis, pilis ad bases eos plumbeis, apicibus albis aut castaneis, illis in abdomine omnino albis. Marsupio ventrali magno, mammis novem, in faciem posticam; quarum una centralis est, reliquis circumdata, intervallis æqualibus, gyrumque facientibus, transversim unciam cum quadrante reddentem.*

	poll.	lin.
Long. capitis . . . . .	5	3
— corporis . . . . .	13	0
— caudæ . . . . .	10	0
— auriculæ . . . . .	3	10
— antibrachii . . . . .	4	0
— pedis antici . . . . .	1	8
— tibiæ . . . . .	3	9
— pedis postici . . . . .	4	6
— ab auriculæ basi usque ad oculum . .	2	0
— ab oculo usque ad nasum . . . . .	2	8
Latitudo auriculæ . . . . .	1	9

*Hab.* In Australiâ Occidentali et in Terrâ Van Diemen.

"The ears are long, broad, and ovate, having several semitransparent dots scattered over their surface (the remains of sebaceous glands). On the anterior extremity the nails are much elongated; the second and third are about  $\frac{1}{4}$ th of an inch longer than the first; they are all flattened at the tips, thus furnishing the animal with a very efficient apparatus for burrowing. The tail offers many differences from that of the other species of the genus *Perameles*. The basal fourth is clothed with hairs about the same length and colour as those of the body. The middle half is black, the hairs on the upper part being elongated; the remaining part is white, with a ridge of long white stiff hairs forming a crest.

"The pouch in this specimen (a female) is large, and has 9 nipples on its posterior surface; one being placed in the centre, and the remainder at equal distances form a circle, the diameter of which is 1 inch 3 lines.

"The skull is perfect, but the state of the skin was such as totally to prevent its removal, and the description is therefore defective in particulars concerning the bones of the face. The interparietal and occipital crests are clearly defined and large. The bulla of the ear is large, and its shape that of a flattened ovoid. The tympanum was entire, and on removing it the manubrium of the malleus was found to be twice the length of its body. The zygomatic arch is imperfect for about the space of  $\frac{1}{2}$  an inch. The lower-jaw is slender, with a salient process at its angle. Dent.: Prin.  $\frac{5-5}{6}$ , Can.  $\frac{1-1}{1-1}$ , Mol. spur.  $\frac{5-5}{5-5}$ , Mol. ver.  $\frac{4-4}{4-4}$ , = 48.

"The two front superior incisors are nearly a line apart, small, and quadrangular; a small space intervenes between these and the three succeeding, which are larger, and placed in a continuous series. The fourth and fifth incisors are about the same distance from each other as the two anterior. Posterior to the incisors is a space about 5 lines in width, for the reception of the inferior canines. The canines are well developed: another space intervenes between them and the false molars, which latter are all rather widely separated, of a conical shape, and have a small tubercle anterior to the body of the tooth.

"The molars of *Perameles*, as figured by M. F. Cuvier in his '*Dents des Mammifères*,' consist of two prisms fixed to a slightly curved base, with the concavity towards the inside of the jaw; but in this species the molars are quadrangular, having had but two sets of tubercles, and in the present specimen these teeth are worn down and present a square surface, inclosed by enamel, having a band of the same running transversely across the middle of the tooth. The two last molars of the upper jaw approximate so closely, as to require careful examination to detect the line of separation. The teeth of the lower jaw, except in number and in the circumstance of all the incisors forming a continuous series, do not differ from those of the upper. When the jaws are closed, the posterior molars of the upper and lower jaws are in contact.

"A friend of Mr. Gould's, residing in Western Australia, states that these animals are found beyond the mountains of Swan River, in

the district of York. They feed upon large maggots and the roots of trees, and do considerable damage to the maize and potato crops by burrowing. A specimen kept by him in confinement became in a few days very docile, but was irritable, and resented the slightest affront or ill usage. It took bread, which it held in its fore-paws. A young one to which it gave birth unfortunately escaped, after being carried in the mother's pouch for several days."

Mr. Reid considers the distinctions between this and the rest of the species belonging to the genus *Perameles* so marked, that should more of the same form be discovered, the above characters would constitute a subgenus to which the name of *Macrotis* might be applied.

Mr. Waterhouse exhibited a second specimen of *Myrmecobius*, and directed the attention of the Meeting to certain differences existing between it and the one upon which he had founded the characters of the genus, and described under the specific name of '*fasciatus*.'

The present animal differs from the one previously described in having the black and fulvous colouring of the back less decided, owing to a larger proportion of interspersed white hairs. The fasciæ, instead of being white, are of a yellowish cream-colour, and they also differ in number and arrangement. Commencing from the tail, the three first are distinct and uninterrupted, the intermediate spaces being about  $\frac{1}{2}$  an inch in width, black, with white hairs interspersed, and a few of an ochraceous colour. The fourth is also distinct, but instead of being continued across the back, it is met by two fasciæ from the opposite side. The two following are continuous, but less distinct than either of the foregoing. Beyond these, the fasciæ are almost obsolete, there being only faint indications of them on the sides of the body.

The most important distinction, however, exists in the teeth, the present specimen possessing altogether four more molars than the one brought before the notice of the Society on a previous occasion. The entire number of teeth is 52, (26 in each jaw), and the 5 posterior molars are placed closely together, differing in that respect from those of the previously examined specimen.

The animal was brought from Van Diemen's Land, and others similar to it were observed scratching at the roots of trees, and feeding upon the insects which are generally abundant in such situations. Their favourite haunts are stated to be the localities in which the Port Jackson willow is most plentiful.

Mr. Waterhouse remarked that although the differences between the two animals were considerable, yet he did not consider the distinctions such as to justify his characterizing the one then before the Meeting as a second species.

A Paper was then read by William Ogilby, Esq., with a view of pointing out the characters to which the most importance should be attached in establishing generic distinctions among the *Ruminantia*.

Mr. Ogilby commences by observing that "It has been justly remarked by Professor Pallas, that if the generic characters of the *Ruminantia* were to be founded upon the modifications of dentition, in accordance with the rule so generally applicable to other groups of Mammals, the greater part of the order would necessarily be comprised in a single genus; since the number, form, and arrangement of the teeth being the same in all, except the *Camels* and *Llamas*, these organs consequently afford no grounds of definite or general distinction. Hence it is that naturalists have been obliged to resort to other principles to regulate the distribution of ruminating animals; and the form, curvature, and direction of the horns, selected for this purpose at a period when the extremely limited knowledge of species permitted the practical application of such arbitrary and artificial characters without any very glaring violation of natural affinities, still continue to be the only rule adopted by zoologists in this department of Mammalogy. The illustrious Illiger forms a solitary but honourable exception; he first introduced the consideration of the muzzle and lachrymal sinus into the definitions of the genera *Antelope*, *Capra*, and *Bos*; but his labours were disregarded by subsequent writers, or his principles applied only to the subdivision of the genus *Antelope*. It is obvious, however, that as the knowledge of new forms and species became more and more extensive, the prevailing gratuitous rule above mentioned, founded as it is upon purely arbitrary characters which have no necessary relation to the habits and œconomy, or even to the general external form, of the animals themselves, would eventually involve in confusion and inconsistency the different groups which were founded upon its application; and such has long been its acknowledged effect. The genus *Antelope*, in particular, has become a kind of zoological refuge for the destitute, and forms an incongruous assemblage of all the hollow-horned *Ruminants*, without distinction of form or character, which the mere shape of the horns excluded from the genera *Bos*, *Ovis*, and *Capra*; it has thus come to contain nearly four times as many species as all the rest of the hollow-horned *Ruminants* together; so diversified are its forms, and so incongruous its materials, that it presents not a single character which will either apply to all its species, or suffice to differentiate it from continuous genera.

"To meet this obvious evil, MM. Lichtenstein, De Blainville, Desmarest, and Hamilton Smith have applied Illiger's principles to subdivide the artificial genus *Antelope* into something more nearly approaching to natural groups; the reform thus effected, however, was but partial in its operation; the root of the evil still remained untouched, for none of these eminent zoologists appears to have been sufficiently aware of the extremely arbitrary and artificial character of the principal group itself, which they contented themselves with breaking up into subgenera, nor of the actual importance and extensive application of the characters which they employed for that purpose. By mixing up these characters, moreover, with others of a secondary and less important nature, the benefit which might have been expected from their labours has been, in a great measure, neu-

tralized; and even the subdivisions which they have introduced into the so-called genus *Antelope*, are less definite and comprehensive than they might otherwise have been made.

"The truth is, however, that the presence or absence of horns in one or both sexes; the substance and nature of these organs, whether solid or concave, permanent or deciduary; the form of the upper lip, whether thin and attenuated as in the goat, or terminating in a broad heavy naked muzzle as in the *Ox*; and the existence of lachrymal sinuses and interdigital pores, are the characters which really influence the habits and œconomy of ruminating animals, and upon which, consequently, their generic distinctions mainly depend. These, with the assistance, in a very few instances, of such accessory characters as the superorbital and maxillary glands, the number of teats, and the existence of inguinal pores, are sufficient in all cases to define and characterize the genera with the strictest reference to logical precision and zoological simplicity. It is not my intention to discuss the value of these characters, or to state the reasons which induced me to adopt them in preference to those more generally employed in this department of Mammalogy; these will form the subject of a future communication, and I shall content myself for the present with observing, that the presence or absence of horns in the females regulates, in a great measure, the social intercourse of the sexes, that upon the form of the lips and muzzle, the only organs of touch and prehension among the *Ruminantia*, depend the nature of the food and habitat, making the animal a *grazer* or a *browser*, as the case may be; and that the existence or nonexistence of interdigital glands, the use of which appears to be to lubricate the hoofs, has a very extensive influence upon the geographical distribution of the species; confining them to the rich savannah and the moist forest, or enabling them to roam over the arid mountain, the parched karroo, and the burning desert.

"Having thus briefly explained the necessity of reforming the characters of the different groups of the Order *Ruminantia*, as they are at present constituted, and the nature and value of the principles which I propose to employ for that purpose, I shall at once proceed to their practical application, confidently anticipating that their employment will remove the most serious objections which exist against the present distribution of the order, and place our knowledge of these interesting animals, in point of scientific accuracy, precision, and affinity, on a par with the more generally cultivated departments of zoology.

#### Fam. I. CAMELIDÆ.

*Pedes* subbisulci, subtus callosi, digitis apice solo distinctis; ungulæ succenturiatæ nullæ; *cornua* nulla; *dentes primores* suprâ duo, infrâ sex.

#### 2 Genera.

1. *CAMELUS*, cujus characteres sunt:

*Digiti* conjuncti, immobiles.

*Rostrum* chilomate instructum, labio fisso.  
*Sinus lachrymales* nulli.  
*Fossæ interdigitales* nullæ.  
*Folliculi inguinales* nulli.  
*Mammæ* quatuor.

2. *ACHYRNA* :

*Digit*i disjuncti, mobiles.  
*Rostrum* chilomate instructum, labio fisso.  
*Sinus lachrymales* nulli.  
*Fossæ interdigitales* nullæ.  
*Folliculi inguinales* nulli.  
*Mammæ* duæ.

“The *Camelidæ* form what Mr. MacLeay would call an aberrant group; they differ essentially from other Ruminants in the structure both of the organs of locomotion and of mastication, and their generic distinctions consequently depend upon characters which have no application to the remaining groups of the order. On the other hand, the principles of generic distribution which subsist among the rest of the *Ruminantia* appear to furnish negative characters only when applied to the *Camelidæ*, but though necessarily expressed negatively, the absence of lachrymal, inguinal, and interdigital sinuses forms, in reality, positive and substantial characters, and as such, as well as for the sake of uniformity, should be introduced into the definition of these, as well as of other genera, in which they unavoidably appear under a negative form.

Fam. II. *CERVIDÆ*.

*Pedes* bisulei; *cornua* solida, plerumque decidua, in mare solo, aut in utroque sexu; *dentes primores* supra nulli, infra octo.

6 Genera.

1. *CAMELOPARDALIS*.

*Cornua* in utroque sexu, perennia, simplicia, cute obducta.  
*Rhinaria* nulla.  
*Sinus lachrymales* nulli.  
*Fossæ interdigitales* parvæ.  
*Folliculi inguinales* nulli.  
*Mammæ* quatuor.

Duo species sunt (*C. Æthiopicus* et *C. Capensis*).

2. *TARANDUS*.

*Cornua* in utroque sexu, subpalmata, decidua.  
*Rhinaria* nulla.  
*Sinus lachrymales* exigui.  
*Fossæ interdigitales* parvæ.  
*Folliculi inguinales* nulli.  
*Mammæ* quatuor.

Typus est *Tarandus Rangifer* (*Cervus Tarandus*).

## 3. ALCES.

*Cornua* in mare solo, palmata, decidua.

*Rhinaria* nulla.

*Sinus lachrymales* exigui.

*Fossæ interdigitales* magnæ.

*Folliculi inguinales* nulli.

*Mammæ* quatuor.

Typus est *Alces Machlis* (*Cervus Alces*).

## 4. CERVUS.

*Cornua* in mare solo, ramosa, decidua.

*Rhinaria* magna.

*Sinus lachrymales* distincti, mobiles.

*Fossæ interdigitales* magnæ.

*Folliculi inguinales* nulli.

*Mammæ* quatuor.

Typi sunt *C. Elaphus* et *C. Saumer* aut *Hippelaphus*, Cuv.

## 5. CAPREA.

*Cornua* in mare solo, subramosa, decidua.

*Rhinaria* distincta.

*Sinus lachrymales* nulli.

*Fossæ interdigitales* magnæ.

*Folliculi inguinales* nulli.

*Mammæ* quatuor.

Typus est *C. Capreolus*.

## 6. PROX.

*Cornua* in mare solo, subramosa, decidua.

*Rhinaria* magna.

*Sinus lachrymales* maximi, mobiles.

*Sinus* duo supraorbitales ad basin cornuum, magni, mobiles.

*Fossæ interdigitales* magnæ.

*Folliculi inguinales* nulli.

*Mammæ* quatuor.

Typus est *Prox Moschatus* (*Cervus Muntjac*).

## Fam. III. MOSCHIDÆ.

*Pedes* bisulci; *cornua* nulla; *dentes* primores suprâ nulli, infrâ octo.

## 2 Genia.

## 1. MOSCHUS.

*Rhinaria* magna.

*Sinus lachrymales* nulli.

*Fossæ interdigitales* nullæ.

*Folliculi inguinales* nulli.

*Mammæ* quatuor.

Typus est *Moschus Moschiferus*.

## 2. IXALUS?

*Rhinaria* nulla.



*Sinus lachrymales* exigui, distincti  
*Fossæ interdigitales* nullæ.  
*Folliculi inguinales* exigui.  
*Mamma* duæ.

Typus est *Iulus Probaton*, Proc. Zool. Soc., Part IV. page 119

“The genus *Iulus*, founded upon the observation of a single specimen, may eventually prove to belong to a different family; it differs little, indeed, from the true Antelopes: but even supposing it to be correctly placed among the *Moschide*, other forms are still wanting to fill up the chasms which evidently exist among the characters of that group. Two are more especially indicated, and our knowledge of the laws of organic combination and of the constituent parts of other groups, gives us every reason to believe in their actual existence, and to anticipate their discovery. They will be characterized nearly as follows, and will probably be found, one in the tropical forests of the Indian Archipelago, and the other on the elevated table lands of Mexico or South America.

#### HINNULUS.

*Rhinaria* magna.  
*Sinus lachrymales* distincti.  
*Fossæ interdigitales* nullæ.  
*Folliculi inguinales* nulli.  
*Mammæ* quatuor.

#### CAPREOLUS.

*Rhinaria* nulla.  
*Sinus lachrymales* nulli.  
*Fossæ interdigitales* parvæ?  
*Folliculi inguinales*?  
*Mammæ* duæ.

“It may appear a bold, perhaps a presumptuous undertaking, thus to predict the discovery of species, and define the characters of genera, of whose actual existence we have no positive knowledge, but, as already remarked, all the analogies of nature, whether derived from organic combination or from the constituent members of similar groups, are in favour of the supposition; and I may observe further, that the recent discovery of the genus *Iulus*, if indeed it eventually prove to be a genus, of which I had long previously defined the characters, as I have here done for the presumed genera *Hinnulus* and *Capreolus*, strengthens my belief in the actual existence of these forms, and increases the probability of their future discovery.

#### Fam. IV. CAPRIDÆ.

*Pedes* bisulci; *cornua* cava, persistentia; *rhinaria* nulla; *dentes* *primores* supra nulli, infra octo.

## 7 Genera.

## 1. MAZAMA.

*Cornua* in mare solo.  
*Sinus lachrymales* nulli.  
*Fossæ interdigitales* distinctæ.  
*Folliculi inguinales* nulli.  
*Mammæ* quatuor.

Typus est *M. Furcifer* (*Antilope Furcifer*).

## 2. MADOQUA.

*Cornua* in mare solo.  
*Sinus lachrymales* distincti.  
*Fossæ interdigitales* distinctæ.  
*Folliculi inguinales* nulli.  
*Mammæ* quatuor.

Typus est *M. Saltiana* (*Ant. Saltiana* et *Hemprichii*).

## 3. ANTILOPE.

*Cornua* in mare solo.  
*Sinus lachrymales* distincti, mobiles.  
*Fossæ interdigitales* maximæ.  
*Folliculi inguinales* maximi.  
*Mammæ* duæ.

Typus est *A. Cervicapra*.

## 4. GAZELLA.

*Cornua* in utroque sexu.  
*Sinus lachrymales* distincti, mobiles.  
*Fossæ interdigitales* maximæ.  
*Folliculi inguinales* maximi.  
*Mammæ* duæ.

Typus est *Gazella Dorcas* (*Ant. Dorcas*).

## 5. OVIS.

*Cornua* in utroque sexu.  
*Sinus lachrymales* exigui, immobiles.  
*Fossæ interdigitales* parvæ.  
*Folliculi inguinales* nulli.  
*Mammæ* duæ.

Typus est *Ovis Aries*.

## 6. CAPRA.

*Cornua* in utroque sexu.  
*Sinus lachrymales* nulli.  
*Fossæ interdigitales* parvæ.  
*Folliculi inguinales* nulli.  
*Mammæ* duæ.

Typus est *Capra Hircus*. Ad hoc genus pertinent *Ovis Tragelaphus*,  
 et *Antilope Lanigera* aut *Americana*, Auct.

## 7. OVIBOS.

*Cornua* in utroque sexu.  
*Sinus lachrymales* nulli.

*Fossæ interdigitales* ?  
*Folliculi inguinales* nulli.  
*Mammæ* quatuor.

Typus *Oribos Moschatus*.

Fam. V. BOVINÆ.

*Pedes* bisulci; *cornua* cava, persistentia; *rhinaria* distincta, nuda, *dentes primores* supra nulli, infra octo.

9 Genera.

1. TRAGUIUS.

*Cornua* in utroque sexu.  
*Glandulæ maxillares* oblongæ.  
*Fossæ interdigitales* nullæ.  
*Folliculi inguinales* nulli.  
*Mammæ* quatuor.

Typus est *T. Pygmaeus* (*Ant. Pygmaeu*).

2. SYLVICAPRA.

*Cornua* in mare solo.  
*Glandulæ maxillares* oblongæ.  
*Fossæ interdigitales* parvæ.  
*Folliculi inguinales* distincti.  
*Mammæ* quatuor.

Typus est *S. Mergens* (*Ant. Mergens*).

3. TRAGELAPHUS.

*Cornua* in mare solo.  
*Sinus lachrymales* magni.  
*Fossæ interdigitales* distinctæ.  
*Folliculi inguinales* nulli.  
*Mammæ* quatuor.

Typus est *T. Hippelaphus* (*Ant. Picta*); the *Niel-ghue*, and not the *Saumer Deer* of India, as I shall show elsewhere, is the animal described by Aristotle under the name of *Hippelaphus*.

4. CALLIOPE.

*Cornua* in mare solo.  
*Sinus lachrymales* nulli.  
*Fossæ interdigitales* nullæ.  
*Folliculi inguinales* distincti.  
*Mammæ* quatuor.

Typus est *Calliope Strepsiceros* (*Ant. Strepsiceros*).

5. KEMAS.

*Cornua* in utroque sexu.  
*Sinus lachrymales* nulli.  
*Fossæ interdigitales* magnæ.  
*Folliculi inguinales* nulli.  
*Mammæ* quatuor.

Typus est *Kemas Ghoral* (*Ant. Goral*).

## 6 CAPRICORNIS.

*Cornua* in utroque sexu.

*Sinus lachrymales* magni.

*Fossæ interdigitales* distinctæ.

*Folliculi inguinales* nulli.

*Mammæ* quatuor.

Typus est *C. Thar* (*Ant. Thar*, Hodg.).

## 7. BUBALUS.

*Cornua* in utroque sexu.

*Sinus lachrymales* exigui, distincti.

*Fossæ interdigitales* magnæ.

*Folliculi inguinales* nulli.

*Mammæ* duæ.

Typus est *Bubalus Mauritanicus* (*Ant. Bubalus*).

## 8. ORYX.

*Cornua* in utroque sexu.

*Sinus lachrymales* nulli.

*Fossæ interdigitales* magnæ.

*Folliculi inguinales* nulli.

*Mammæ* quatuor.

Species sunt *O. Capensis* (*Ant. Oryx*), *Leucoryx*, *Leucophæa*, &c.

## 9. BOS.

*Cornua* in utroque sexu.

*Sinus lachrymales* nulli.

*Fossæ interdigitales* nullæ.

*Folliculi inguinales* nulli.

*Mammæ* quatuor.

Typus est *Bos Taurus*.

"I have here confined myself strictly to generic characters; the synonymy and discrimination of species will form the subject of a future monograph; in the mean time, with the assistance of the Article ANTELOPE in the Penny Cyclopædia, or, with the proper corrections, of Col. Smith's Treatise on the Ruminants in the fourth volume of Griffith's Translation of the 'Règne Animal,' the student will have no difficulty in referring any particular species to its appropriate genus. He will thus be enabled to judge of the correctness or incorrectness of the affinities here indicated, and consequently to form a tolerable estimate of the value of the characters by which I propose to distinguish the genera of ruminating animals; and indeed it is principally from the wish to excite the attention of zoologists to more extensive observation than I myself possess, that I have been induced to publish the present analysis of my own investigations in this department of Mammalogy."

Mr. Gould exhibited numerous examples of the genus *Strix* (as at present restricted), from numerous parts of the globe, including three undescribed species from Australia, which he characterizes as follows:

- + *STRIX CASTANOPS*. *Str. disco fasciali castaneo, ad marginem saturatiore, et nigro circumdato; corpore suprâ alis caudaque latè rufo-brunneis, plumis singulis fuscus latis saturatè brunneis, dispariter ornatis; capite humerisque maculis sparsis minutis albis; corpore infrâ flavescenti-brunneo; lateribus colli corporisque guttis nigris sparsè ornatis; femoribus tibiisque flavo-brunneis pedibus flavescentibus; rostro flavo-fusco.*

Long. tot. 18 unc.; rostri,  $2\frac{1}{2}$ ; alæ, 15; caudæ, 7; tarsi,  $3\frac{1}{2}$ .

*Hab.* In Terrâ Van Diemen.

This is the largest known species of the restricted genus *Strix*, of which the common *Barn Owl* is a typical example.

- + *STRIX CYCLOPS*. *Str. disco fasciali albo, venustè annulo saturatè brunneo, circumdato; corpore supra albo; dorso humerisque pallidè stramineis, maculis brunneis et albis lentiginosis, primariis, fasciis alternis stramineis brunneisque; pogoniis externis apicibusque lineis brunneis rectis, frequentibus, et retortis; caudâ albat fasciis brunneis; interstitiis albis brunneo crebrè guttatis, corpore infrâ albo, maculis brunneis; femoribus tarsisque albis; pedibus flavo-fuscis; rostro livido.*

Long. tot. 15 unc.; rostri,  $1\frac{7}{8}$ ; alæ,  $11\frac{1}{2}$ ; caudæ,  $5\frac{1}{2}$ ; tarsi,  $2\frac{3}{4}$ .

*Hab.* In Novâ Cambriâ Australi.

This is one of the most beautiful species of the genus.

- ✕ *STRIX DELICATULUS*. *Str. disco fasciali albo, margine straminei circumdato; corpore suprâ pallidè cano-fusco, flavo tincto, notis nigricantibus et albidis intermixtis delicatulis frequentibusque ornato; alis pallidè fulvis, fasciis lineisque rectis retortis pallide brunneis; primariis ad apicem guttâ alba notatis; caudæ rectricibus quoad colorem remiges fingentibus at guttâ apicali albi obscuriore; corpore infrâ albo; pectore lateribusque maculis brunnescentibus sparsè notatis; femoribus tibiisque albis; pedibus flavescentibus rostro livido.*

Long. tot. 14 unc.; rostri,  $1\frac{7}{8}$ ; alæ, 11; caudæ, 4; tarsi,  $2\frac{1}{2}$ .

*Hab.* In Novâ Cambriâ Australi.

This species in some respects very closely resembles the common *British Owl*, *St. flammea*; but it has a longer bill, and is considerably smaller.

December 27th, 1836.

Richard Owen, Esq., in the Chair.

The remainder of M. F. Cuvier's Paper on the *Jerboas* and *Gerbillas* was read.

M. Cuvier commences this memoir with observing that his attention has been particularly directed to the *Rodentia*, with a view of arriving at a natural classification of the numerous species composing that order, among which considerable confusion had hitherto prevailed, particularly in the genera *Dipus* and *Gerbillus*, the relations of which to other allied groups have been but very imperfectly understood by previous writers.

The species included in the genus *Dipus* have been formed by M. Lichtenstein into three divisions, which are distinguished by the absence and number of rudimentary toes upon the hind feet. In the first section are placed those with three toes, all perfectly formed; in the second, those with four, one of which is rudimentary; and in the third, those with five, two of these being rudimentary. M. Cuvier states that he is unacquainted with the second division of M. Lichtenstein, but in the examination of the species belonging to the first, in addition to the absence of rudimentary toes, he finds they are also distinguished from those of the third by the form of the teeth, and the osteological characters of the head. These points of difference he considers of sufficient importance to justify his making a distinct genus for the *Jerboas* with five toes, adopting the name *Allactaga*, given by Pallas to a species, as the common generic appellation.

"We know," observes M. Cuvier, "that the three principal toes of the *Allactagas*, as well as the three only toes of the *Jerboas*, are articulated to a single metatarsal bone, and that the two rudimentary toes of the first genus have each their metatarsal bone; whence, it results that the penultimate segment of the foot is composed of three bones in the *Allactagas*, and of one only in the *Jerboas*. The incisors of the *Allactagas* are simple, whilst those in the upper-jaw of the *Jerboas* are divided longitudinally by a furrow. The molars of the latter genus are complicated in form, and but little resemble those of the former. They are four in number in the upper-jaw, and three in the lower, but the first in the upper is a small rudimentary tooth, which probably disappears in aged individuals."

The structure of the grinding teeth is then described in detail, and illustrated by drawings which accompanied the paper.

"The general structure of the head of the *Allactagas* and *Jerboas* is evidently the same, and is characterized by the large size of the *cranium*, the shortness of the muzzle, and above all by the magnitude of the suborbital *foramina*. The *cranium* of the *Jerboa* is distinguished by its great breadth posteriorly resulting from the enormous development of the tympanic bone, which extends beyond the occi-

pital posteriorly and laterally as far as the zygomatic arch, which is by no means the case in the *Allactagas*, where all the osseous parts of the ear are of moderate dimensions. Another differential character between the two genera, is presented by the maxillary arch, which circumscribes externally the suborbital foramina, and which, in the *Allactagas*, may be said to be linear, and presenting a very limited surface for the attachment of muscles. Lastly, we may note a difference in the relative development of the jaws, the lower being comparatively much shorter in the *Allactagas* than in the *Gerboas*."

The author then proceeds to describe a new species of *Allactaga*, a native of Barbary, for which he proposes the name of *A. arundinis*. Its length from the origin of the tail to the end of the muzzle, 5 inches; length of the tail, 5 inches and 2 or 3 lines; of the ears, 1 inch; length of the tarsi from the heel to the extremity of the toes, 22 lines. All the upper parts of the body are of a beautiful greyish yellow, with yellowish sides and tail of the same colour, terminated by a tuft of a blackish brown at its origin, and white at the extremity. The sides of the cheek, the ventral surface of the body, and the internal limbs are white; large brown moustaches adorn the sides of the muzzle. The incisors are white and entire, the ears almost naked.

M. Cuvier next proceeds to consider the characters and affinities of the genera *Gerbillus* and *Meriones*, and enters into a critical examination of all the species referred to that group. To these he adds another species, the habits of which he details, and describes at length under the name of *G. Burtoni*. The species which he thus includes are, 1st, *G. Egyptiacus*, syn. *Dipus Gerbillus*, *Meriones quadrinaculatus*, Ehrenberg; 2nd, *Gerbillus pyramidum*, syn. *Dipus pyramidum* Geoff., *Meriones robustus* Rupp.; 3rd, *G. pygargus*, syn. *Meriones Gerbillus*, Rupp.; 4th, *G. Nidicus*, syn. *Dipus Nidicus*, Hardwicke; 5th, *G. Africanus*, syn. *Meriones Schlegelii* Smutz., *G. Afra* Gray; 6th, *G. brevis-caudatus*; 7th, *G. Otaria*; 8th, *G. Burtoni*. The author enters into detailed descriptions of each of these species from original specimens. M. Cuvier lastly considers the affinities of the *Gerbillus* and *Allactagas* to the *Gerboas*, and concludes that the *Gerbillus* have a much nearer affinity to the *Muride*.

Mr. Gould exhibited to the Meeting all the species from which the drawings had been taken for the first part of his new work on the Birds of Australia, among which were several new and very remarkable forms. The following hitherto undescribed genera and species were named and characterized.

*OCYPTERUS SUPERCILIOSUS*. *Oc. facie, gulo, pectoreque nigrescenti-griseis; lined superciliari alba ad basin rostri excurrente; summo capite, corpore superiore alisque fuliginosis; abdomine crissoque castaneis; rectricibus griseo-fuliginosis, ad apicem albescentibus, intermediis duabus exceptis; rostro plumbeo, ad apicem nigro; pedibus plumbeis.*

Long. tot. 7 unc.; rostri, 1; alæ,  $4\frac{1}{2}$ ; caudæ, 3; tarsi,  $\frac{1}{2}$ .

Hab. In Novâ Cambriâ Australi.

VANGA CINEREA. Mas. *Vang. capite et nucha nigris loro albo; dorso, humeris et uropygio griseis; tectricibus caudæ albis, rectricibus caudæ nigris, internè ad apicem albis, duabus intermediis exceptis, secundariis in medio, tectricibus majoribus, gula et corpore subtus, albis; rostro ad basin plumbeo, ad apicem nigro; pedibus nigris*  
 Long. tot.  $12\frac{1}{2}$  unc.; rostri,  $1\frac{7}{8}$ ; alæ, 6; caudæ,  $5\frac{3}{8}$ ; tarsi,  $1\frac{1}{2}$ .  
*Hab.* In Terrâ Van Diemen.

VANGA NIGROGULARIS. Mas. *Vang. capite, collo, et pectore nigris; torque nuchali, ptilis, pteromatum strigâ longitudinali, dorso imo, uropygio, abdomine, crisso, rectricumque lateralium apicibus albis; rectricibus duabus, intermediis omnino nigris; rostro ad basin plumbeo in nigrum transeunte; pedibus nigris.*

Fœm. vel mas jun.? *Partibus quæ in mare nigris in hâc cinerascens-brunneis, vittâ occipitali ferè ubsoleta; gula pectoreque fulvo brunneis; partibus reliquis ut in mare adulto.*

Long. tot.  $13\frac{1}{2}$  unc.; rostri,  $1\frac{3}{4}$ ; alæ, 7; caudæ, 6; tarsi,  $1\frac{1}{2}$ .  
*Hab.* In Novâ Cambriâ Australi.

#### STRUTHIDEA.

*Rostrum validum, robustum, tumidum, suprâ arcuatum, altitudine latitudinem eccellente; gonyde angulato; naribus rotundatis opertis; mandibulâ inferiore ad basin incrassatâ, et in genas pereunte; alæ mediocres, rotundatæ; remige primo brevi, quarto et quinto longissimis, remigibus secundariis elongatis et latis; tarsi mediocri longitudine et robusti, anticè scutellati, posticè plani; digitis subvalidis; pollice medio digito brevior et validiore.*

STRUTHIDEA CINEREA. *Struth. capite, collo, partibusque corporis inferioribus griseis; singulis plumis ad marginem pallidioribus; alis brunneis; rectricibus caudæ nigris, metallicè viridi nitentibus; rostro pedibusque nigris.*

Long. tot.  $11\frac{1}{2}$  unc.; rostri,  $\frac{5}{8}$ ; alæ,  $5\frac{1}{2}$ ; caudæ, 6; tarsi,  $1\frac{1}{2}$ .  
*Hab.* In Novâ Cambriâ Australi.

TROPIDORHYNCHUS CITREOGULARIS. *Trop. summo capite, dorso, uropygio, alis, caudæque brunneis, his pallidioribus; pogoniis externis remigum secundariorum olivaceo marginatis; caudâ ad apicem griseâ; nuchâ ac lateribus colli albescenti-griseis; mandibulâ inferiori ad basin notâque nudâ pone oculos cæruleis; gula et lateribus pectoris citreis; abdomine pallidè griseo; rostro nigro; pedibus plumbeis.*

Long. tot.  $10\frac{1}{2}$  unc.; rostri,  $1\frac{1}{4}$ ; alæ,  $5\frac{1}{4}$ ; caudæ,  $4\frac{1}{2}$ ; tarsi,  $1\frac{1}{8}$ .  
*Hab.* In Novâ Cambriâ Australi.

MELIPHAGA PENICILLATA. *Mel. facie plumisque auricularibus flavidis; pone has penicillâ sericed albâ oriente; corpore superiore flavescenti-griseo; pogoniis remigum externis latioribus; corpore subtus pallidè brunnescenti-cinereo; rostro pedibusque brunneis.*

Long. tot.  $6\frac{1}{4}$  unc.; rostri,  $\frac{5}{8}$ ; alæ, 3; caudæ,  $3\frac{1}{4}$ ; tarsi,  $\frac{5}{8}$ .  
*Hab.* In Novâ Cambriâ Australi.



*MELIPHAGA SERICEA.* *Mel.* summo capite, guld, et regione circa oculos nigris; strigâ frontali albâ supra oculos tendente; penicillâ pilosâ albâ, genas auresque tegente; dorso brunnescenti-cinereo, longitudinaliter nigro striato; corpore subtus albo singulis plumis in medio longitudinaliter nigris; alis brunnescenti-nigris, pogoniis remigum externis, latè flavidis; rectricibus caudæ brunneis, pogoniis ad marginem flavescentibus; rostro pedibusque nigris.

Long. tot.  $6\frac{1}{2}$  unc.; rostri,  $\frac{7}{8}$ ; alæ,  $2\frac{3}{4}$ ; caudæ,  $2\frac{1}{2}$ ; tarsi,  $\frac{1}{2}$ .

*Hab.* In Novâ Cambriâ Australi.

#### HEMATOPS.

*Rostrum* capite brevius, levitèr arcuatum, acutum, sine denticulo ad apicem; compressiusculum; *naribus* longitudinalibus, et operculo tectis, setis nullis ad rictum: alæ mediocres, remige primo brevi, tertio et quarto ferè æqualibus et longissimis: caudâ medigeri, æquali vel levitèr forficatâ: *tarsi* mediocres, sub validi halluce et ungue, digitum medium et unguem æquantibus; digitis externis longitudine paribus; *nævi* sanguinolenti supra oculos.

*HEMATOPS VALIDIROSTRIS.* *Hæm.* summo capite splendidè nigro, vittâ occipitali albâ, pone oculos oriente; plumis auricularibus, mento, et nuchâ nigris; summo corpore olivaceo, griseo lavato; uropygio rectricumque pogoniis externis latioribus; alis brunneis, olivaceo levitèr tinctis; guld albâ, corpore subtus brunnescenti-griseo; rostro nigro, et ad apicem depressiusculo; pedibus carnosis.

Long. tot.  $6\frac{3}{4}$  unc.; rostri,  $\frac{5}{8}$ ; alæ,  $3\frac{1}{2}$ ; caudæ, 3; tarsi,  $\frac{7}{8}$ .

*Hab.* In Terrâ Van Diemen.

*HEMATOPS GULARIS.* *Hæm.* summo capite nigro, vittâ occipitali albâ pone oculos oriente; plumis auricularibus et nuchâ nigris; dorso et uropygio aurato-olivaceis; alis caudâque brunneis; guld cinerascenti-albâ, strigâ nigrâ per mediam partem tendente; corpore subtus cinerascenti-brunneo; rostro nigro; pedibus pullidè brunneis.

Long. tot. 6 unc.; rostri,  $\frac{5}{8}$ ; alæ,  $3\frac{3}{8}$ ; caudæ,  $2\frac{1}{4}$ ; tarsi,  $\frac{7}{8}$ .

*Hab.* In Novâ Cambriâ Australi.

#### NEOMORPHA.

*Rostrum* longitudine caput excellens ad latera compressum, arcuatum, corneum, solidum, acutum ad apicem denticulo; *nares* opertæ, in sulco basali; carinâ mandibulæ superioris in pontem tendente; lingua dura, gracilis, ad apicem setosa; anguli oris carunculis carneis pendentibus conferti; alæ ———; pedes ———; cauda corpus longitudine æquans.

*NEOMORPHA ACUTIROSTRIS.* *Neom.* rostro gracili, elongato, arcuato, colore corneo, in plumbeum ad basin transeunte; carunculis latè aurantiacis; corpore toto nigro; caudâ largè ad apicem albâ.

Long. tot.  $16\frac{1}{2}$  unc.; rostri,  $3\frac{1}{2}$ ; alæ, —; caudæ, 7; tarsi, —.

*NEOMORPHA CRASSIROSTRIS.* *Neom.* rostro subarcuato, valido, acuto, corneo colore, in plumbeum ad basin transeunte; corpore nigro; caudâ largè ad apicem albid.

Long. tot.  $17\frac{1}{2}$  unc.; rostri,  $2\frac{1}{2}$ ; alæ, —; caudæ,  $7\frac{1}{2}$ ; tarsi, —.

*Remark.* It is to be regretted that the only examples known of both these species are imperfect, wanting the feet and the greater portion of the wings: they form a part of the Zoological Society's collection, and were obtained from the captain of a vessel, who had received them from a native chief in New Zealand.

*PODICEPS GULARIS.* *Pod.* summo capite, et nuchâ, intensè nigrescenti-brunneis, olivaceo lavatis; gutture genisque nigris; strigâ castaneâ pone oculos oriente et per latera colli excurrente; corpore suprâ nigrescenti-brunneo; tectricibus alæ secundariis albo marginatis, hoc colore villam transversam faciente; collo imo, pectore et corpore subtus argenteo-griseis, hoc colore in brunneum ad latera transeunte; rostro et pedibus nigris.

Long. tot. 10 unc.; rostro,  $1\frac{1}{4}$ ; alæ,  $4\frac{1}{2}$ ; tarsi,  $1\frac{1}{2}$ .

*Hab.* In Novâ Cambriâ Australi.

*PODICEPS NESTOR.* *Pod.* capite plumis elongatis sericeis albis induto; gutture et occipite nigris; corpore suprâ intensè brunneo, subtus argenteo-griseo, ad latera brunneo lavato; rostro nigro ad apicem pallidiorè; tarsis olivaceo-nigris.

Long. tot. 9 unc.; rostri, 1; alæ,  $4\frac{1}{2}$ ; tarsi,  $1\frac{3}{4}$ .

*Hab.* In Terrâ Van Diemen et in Novâ Cambriâ Australi.

#### CALODERA.\*

*Rostrum* validum, arcuatum, capite brevius, naribus basalibus rotundatis, ferè apertis, mandibulâ superiore ad apicem levitèr indentatâ marginibus sulcatis; margine mandibulæ inferioris in sulcum superioris recepto; *ales* mediocres, remige primo brevissimo; *tarsi* validi, antrorsim scutellati, pollice cum digito interno conjuncto, hâc ejusque ungue, validis, at medio digito ungueque, brevioribus; *ungues* incurvati et acuti; *cauda* mediocris, penitùs æqualis.

\* The species belonging to the genus *Calodera*, are characterized at page 106.



# INDEX.

The names of New Species and of Species newly characterized are printed in Roman Characters: those of Species previously known, but respecting which novel information is given, in *Italics*: those of species respecting which Anatomical Observations are made, in CAPITALS.

	Page.		Page.
<i>Actinodura</i> , n. g., <i>Gould</i> .....	17	<i>Camelopardalis</i> , Linn. ....	134
<i>Egertoni</i> , <i>Gould</i> . ...	18	<i>Giraffa</i> , Linn. ...	9
<i>Ures</i> , Ill. ....	135	<i>Camelus</i> , Linn. ....	133
<i>Allactaga</i> , n. g., <i>F. Cuvier</i> ....	111	<i>Canis Himalaicus</i> , <i>Ogilb.</i> ....	163
<i>arundinis</i> , <i>F. Cuvier</i> ....	142	<i>Capra</i> , Linn. ....	137
<i>Amadina Castanotis</i> , <i>Gould</i> .....	105	<i>Caprea</i> , n. g., <i>Ogilb.</i> ....	135
<i>cincta</i> , <i>Gould</i> .....	105	<i>Capreolus</i> , n. g., <i>Ogilb.</i> .....	136
<i>modesta</i> , <i>Gould</i> .....	105	<i>Capricornis</i> , n. g., <i>Ogilb.</i> ....	139
<i>ruficauda</i> , <i>Gould</i> ....	106	<i>Capros Aper</i> , <i>La Cep.</i> ....	51
<i>Anas marmorata</i> , Tem.....	59	<i>Cephalopoda</i> .....	19
<i>Anthropoides paradisæus</i> , <i>Bechst.</i>	30	<i>Cerculeptes brachyotus</i> , <i>Mart.</i> ...	83
<i>Antelope</i> , Pall. ....	137	<i>megalotus</i> , <i>Mart.</i> ...	83
<i>adenota</i> , H. Smith ....	103	<i>Cervus</i> , Linn.....	135
<i>Cervicapra</i> , Pall.....	31	<i>Aristotelis</i> , Cuv.....	39
<i>Eurycerus</i> , <i>Ogilb.</i> .....	120	<i>Barhaiya</i> , <i>Hodg.</i> .....	46
<i>Forfex</i> , H. Smith ....	103	<i>Muntjac</i> , Gmel.....	66
<i>hob</i> , <i>Ogilb.</i> ....	102	<i>Charadrius Morinellus</i> , Linn. ...	1
<i>Koba</i> , <i>Ogilb.</i> ....	102	<i>Chironectes Yapock</i> , <i>Desm.</i> ....	56
<i>Korrigum</i> , <i>Ogilb.</i> .....	103	<i>Colluricincla fusca</i> , <i>Gould</i> .....	6
<i>montana</i> , Rüpp. ....	3	<i>Conus Adamsonii</i> , <i>Brod.</i> ....	14
<i>palmata</i> , H. Smith.....	121	<i>Corvus curvirostris</i> , <i>Gould</i> .....	18
<i>Philantomba</i> , <i>Ogilb.</i> ...	121	<i>pectoralis</i> , <i>Gould</i> ....	18
<i>Sumatrensis</i> <i>Desm.</i> ....	121	<i>CORYTHAIX BUITONII</i> , <i>Vaill.</i> .....	32
<i>Aplonis</i> , n. g., <i>Gould</i> .....	73	<i>Cracticus fuliginosus</i> , <i>Gould</i> .....	106
<i>fusca</i> , <i>Gould</i> .....	73	<i>hypoleucus</i> , <i>Gould</i> .....	100
<i>marginata</i> , <i>Gould</i> ....	73	<i>Cranchia Bonelliana</i> , <i>Fér.</i> .....	20
<i>Argonauta Argo</i> , Linn. ....	102	<i>cardioptera</i> , <i>Peron</i> .....	26
<i>hians</i> , Lam. ....	22	<i>minima</i> , <i>Fér.</i> ....	20
<i>rufa</i> , <i>Owen</i> ....	23	<i>scabra</i> , <i>Leach</i> ....	20
<i>Auchenia</i> , Ill. ....	134	<i>Crax rubra</i> , Linn.....	1
<i>Bos</i> , Linn.....	139	<i>Cursorius rufus</i> , <i>Gould</i> ....	81
<i>Bubalus</i> , n. g., <i>Ogilb.</i> .....	139	<i>CYNICTIS MELANURUS</i> , <i>Mart.</i> ...	56
<i>Bulinus Crichtoni</i> , <i>Brod.</i> ....	11	<i>Cynogale</i> , n. g., <i>Gray</i> ....	88
<i>inflatus</i> , <i>Brod.</i> ....	15	<i>Bennettii</i> , <i>Gray</i> ....	88
<i>pusio</i> , <i>Brod.</i> .....	45	<i>Cyprinus carpio</i> , Linn. ....	109
<i>Calliope</i> , n. g., <i>Ogilb.</i> .....	138	<i>DICHOLOPHUS CRISTATUS</i> , Ill.....	29
<i>Calodera</i> n. g., <i>Gould</i> ....	115	<i>Dipodidae</i> .....	127
<i>maculata</i> , <i>Gould</i> ....	106	<i>Dipus</i> , <i>Schreb.</i> ....	141
<i>Calyptrorhynchus Naso</i> , <i>Gould</i> ...	106	<i>Edolius Chrisna</i> , <i>Gould</i> ....	5

	Page.		P. 2c.
<i>Edolius grandis</i> , Gould.....	5	<i>Moschus Moschiferus</i> , Linn. ....	63
<i>Rangoonensis</i> , Gould ...	5	<i>pygmaeus</i> , Linn. ....	66
<i>viridescens</i> , Gould .....	6	<i>Stanleyanus</i> , Gray.....	65
<i>Emberiza cinerea</i> , <i>Strickl.</i> .....	99	<i>Mulinia</i> , n. g., <i>Gray</i> .....	101
<i>ENHYDRA MARINA</i> , Flein. ....	59	<i>Myimicrobius</i> , n. g., <i>Waterhouse</i> .	69
<i>Felis Diardi</i> , Cuv. ....	107	<i>fasciatus</i> , <i>Waterh.</i> 69, 132	
<i>maimorata</i> , Mart. ....	107	<i>V. omorpha</i> , n. g., Gould .....	115
<i>Tigris</i> , Linn.....	123	<i>acutirostris</i> , <i>Gould</i> ...	115
<i>Fringilla scrianus</i> , Linn. ....	59	<i>crassirostris</i> , <i>Gould</i> ..	115
<i>Gallinago heterura</i> , <i>Hodg.</i> ....	8	<i>OCTODON CUMINGII</i> , Benn. ....	70
<i>media</i> , Ray .....	8	<i>Octopus semipalmatus</i> , <i>Owen</i> ...	22
<i>nemoricola</i> , <i>Hodg.</i> ...	8	<i>Ocypterus superciliosus</i> , <i>Gould</i> ...	112
<i>solitaria</i> , <i>Hodg.</i> .....	8	<i>Ocythoe</i> .....	121
<i>Gallinula ventralis</i> , <i>Gould</i> .....	85	<i>Cranchii</i> , <i>Leach</i> .....	19
<i>Gazella</i> , n. g., <i>Ogilb.</i> .....	137	<i>Orpheus modulator</i> , <i>Gould</i> .....	6
<i>Geocichla rubicola</i> , <i>Gould</i> .....	7	<i>Ortyx ocellatus</i> , <i>Gould</i> .....	75
<i>Gerbillus</i> , Desm.....	111	<i>Oryx</i> , n. g., <i>Ogilb.</i> .....	139
<i>Glaucus hexapterygius</i> , Cuv.....	113	<i>Ovibos</i> , De Blainv.....	137
<i>Gnathodon</i> , Gray .....	101	<i>Ovis</i> , Linn.....	137
<i>Gnathostoma</i> , n. g., <i>Owen</i> .....	125	<i>Oxyura Australis</i> , <i>Gould</i> .....	85
SPINIGLUM, <i>Owen</i> 125		<i>Paradoxornis</i> , n. g., <i>Gould</i> ....	17
<i>Hamatops</i> , n. g., <i>Gould</i> .....	111	<i>flavirostris</i> , <i>Gould</i> ..	17
<i>gularis</i> , <i>Gould</i> .....	141	<i>Paradoxurus leucomystax</i> , <i>Gray</i> ..	88
<i>validirostris</i> , <i>Gould</i> ...	141	<i>Perameles Lagotis</i> , <i>Reid</i> .....	129
<i>Haliæetus albicilla</i> , Sav.....	49	<i>Petroica Phœnicea</i> , <i>Gould</i> .....	105
<i>Herpestes brachyurus</i> , <i>Gray</i> ...	88	<i>PHALANGISTA VULPINA</i> , Cuv. ...	2
<i>Himnulus</i> , n. g., <i>Ogilb.</i> .....	136	<i>PHASCOLARCTOS LUCUS</i> , Desm... 109	
<i>Ixalus</i> , n. g., <i>Ogilb.</i> .....	135	<i>PHASCOLOMYS WOMBAT</i> , Pet.....	49
<i>Probaton</i> , <i>Ogilb.</i> .....	119	<i>Physcter macrocephalus</i> , La Cep. 127	
<i>Ixos leucotis</i> , <i>Gould</i> .....	6	<i>Pipra squalida</i> , <i>Burton</i> .....	113
<i>Kemas</i> , n. g., <i>Ogilb.</i> ..	138	<i>Plectolophus productus</i> , <i>Gould</i> ...	19
<i>Kittacincla</i> , n. g., <i>Gould</i> .....	7	<i>Podiceps gularis</i> , <i>Gould</i> .....	115
<i>Lepus Californica</i> , <i>Gray</i> .....	88	<i>Nestor</i> , <i>Gould</i> .....	145
<i>Douglasii</i> , <i>Gray</i> .....	88	<i>Porpita</i> .....	116
<i>longicaudata</i> , <i>Gray</i> ....	88	<i>Prionites œruliceps</i> , <i>Gould</i> ....	18
<i>Loligo corolliflora</i> , Til. ....	21	<i>Prox</i> , n. g., <i>Ogilb.</i> .....	135
<i>laticeps</i> , <i>Owen</i> .....	20	<i>Psittacus augustus</i> , <i>Fig.</i> .....	80
<i>Pealii</i> , <i>Leach</i> .....	21	<i>Pteromys Guildingii</i> , <i>Fig.</i> .....	80
<i>Macropus penicillatus</i> , <i>Gray</i> ....	41	<i>albiventer</i> , <i>Gray</i> .....	88
<i>Macroramphus griseus</i> , <i>Leach</i> ...	1	<i>Leachii</i> , <i>Gray</i> .....	88
<i>Mactra Sprengleri</i> , Linn.....	101	<i>melanotis</i> , <i>Gray</i> .....	88
<i>Madoqua</i> , n. g., <i>Ogilb.</i> .....	137	<i>Parpura Gravesii</i> , <i>Brod.</i> .....	44
<i>Mazama</i> , n. g., <i>Ogilb.</i> .....	137	<i>Rostellaria pes Pelicani</i> , Lam... 46	
<i>Meliphaga penicillata</i> , <i>Gould</i> ...	113	<i>Sciurus Douglasii</i> , <i>Gray</i> .....	88
<i>sericea</i> , <i>Gould</i> .....	144	<i>Scolopax Rusticola</i> , Linn.....	7
<i>Meriones</i> , Ill.....	142	<i>Scytalopus</i> , n. g., <i>Gould</i> .....	89
<i>Micetes seniculus</i> , Desm. ....	25	<i>albugularis</i> , <i>Gould</i> ...	90
<i>Moschus</i> , Linn. ....	135	<i>fuscus</i> , <i>Gould</i> .....	89
<i>Americanus</i> , Linn.....	66	<i>Simia Morio</i> , <i>Owen</i> .....	92
<i>delicatulus</i> , Shaw. ....	66	<i>Satyru</i> , Linn.....	91
<i>fulviventor</i> , <i>Gray</i> .....	65	<i>TROGLODYTES</i> , Linn. ...	41
<i>Griffithii</i> , Fisch.....	66	<i>Wurmii</i> , Fisch. ....	91
<i>Javanicus</i> , Gmel. ....	64	<i>Spondylus albidus</i> , <i>Brod.</i> .....	43
<i>Kanchil</i> , Raf. ....	61	<i>Strix castinops</i> , <i>Gould</i> .....	110
<i>Meminna</i> , Linn.....	63	<i>Cyclops</i> , <i>Gould</i> .....	140

	Page.		Page.
<i>Strix delicatulus</i> , Gould .....	140	<i>Troglodytes leucogastra</i> , Gould .	89
<i>Struthidea</i> , n. g., Gould .....	113	<i>Magellanicus</i> , Gould .....	88
<i>cincta</i> , Gould .....	143	<i>Trogon pasoninus</i> , Spix .....	12
<i>Sylvia brevirostris</i> , Strickl.....	98	<i>resplendens</i> , Gould .....	12
<i>Sylvicapra</i> , n. g., Ogilb.....	138	<i>Tropidorhynchus citreogularis</i> ,	
<i>Tamatia bicincta</i> , Gould .....	80	Gould .....	143
<i>Taiandus</i> , n. g., Ogilb. ....	135	<i>Tubularia gracilis</i> , Harv. ....	54
<i>Testudo Indica</i> , Linn. ....	59	<i>indivisa</i> , Ellis .....	54
<i>Thryothorus guttatus</i> , Gould.....	89	<i>Turdus maciourus</i> , Lath. ....	7
<i>Tiliqua Fernandi</i> , Burton .....	62	<i>Vanga cinerea</i> , Gould .....	143
<i>Tinamotis</i> , n. g., Vig. ....	79	<i>nigrogularis</i> , Gould .....	113
<i>Pentlandii</i> , Vig. ....	79	<i>Veleda limbosa</i> , Lam. ....	79
<i>Torpedo vulgaris</i> , Flem. ....	109	<i>Vespertilionidæ</i> .....	46
<i>Tragelaphus</i> , n. g., Ogilb.....	138	<i>Voluta Beckii</i> , Brod. ....	43
<i>Tragopon Temminckii</i> , Gray.....	59	<i>concinna</i> , Brod. ....	43
<i>Tragulus</i> , Gray, n. div.....	63	<i>Vultur Papa</i> , Linn. ....	107
<i>Tragulus</i> , n. g., Ogilb. ....	138	<i>Zosterops albogularis</i> , Gould ...	75
<i>Trichophorus flaveolus</i> , Gould ...	6	<i>tenuirostris</i> , Gould ...	76

THE END.



I. A. R. I. 75.

IMPERIAL AGRICULTURAL RESEARCH  
INSTITUTE LIBRARY  
NEW DELHI.

[illegible]